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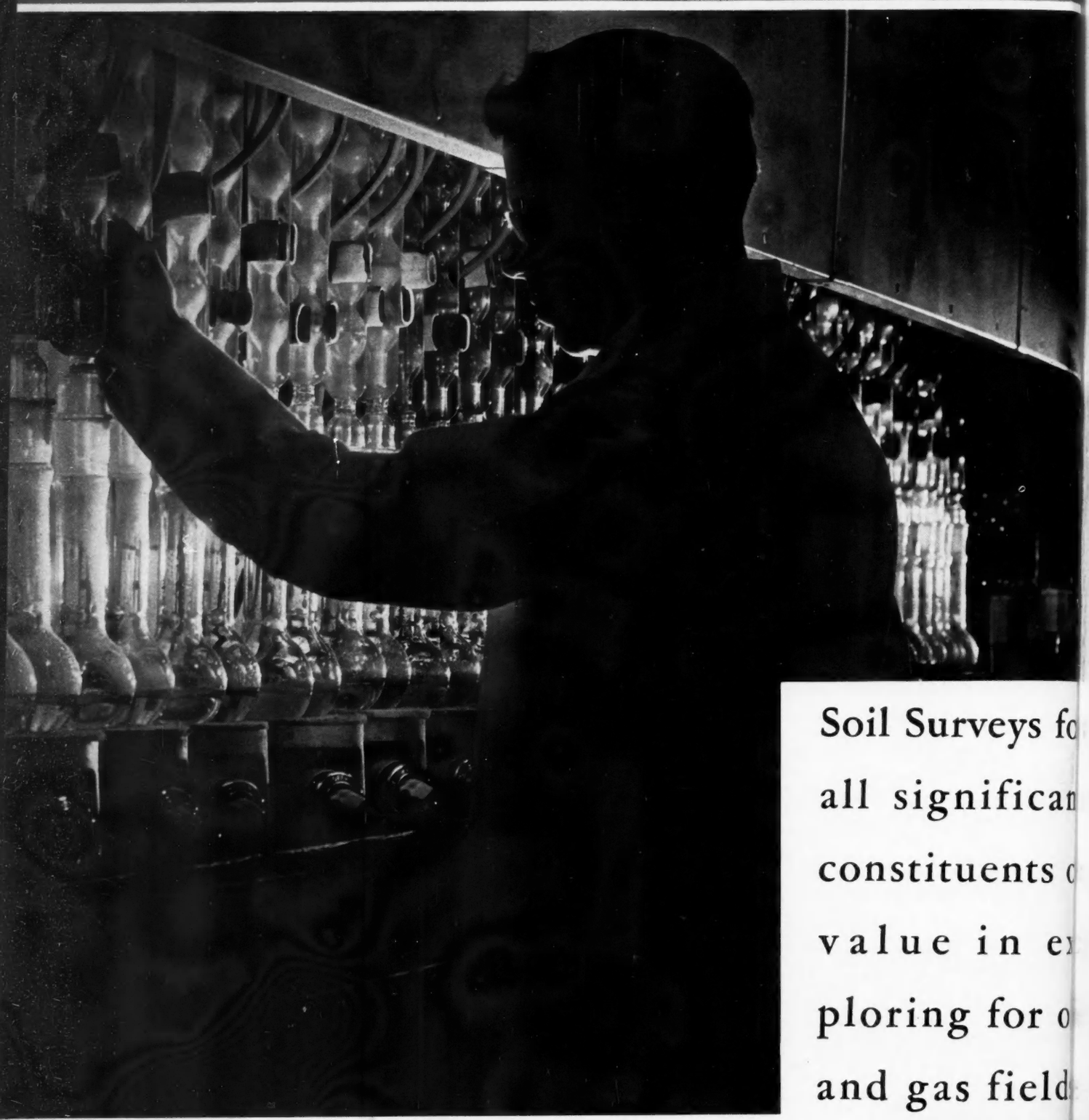

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The Oil Man's Calendar

MAR.	
16–17	Southwestern District, American Petroleum Institute, Division of Production, San Antonio.
20–22	Western Petroleum Refiners Association, San Antonio, Texas.
21–23	Society of Exploration Geophysicists, Huckins Hotel, Oklahoma City.
22–24	American Association of Petroleum Geologists, Skirvin Hotel, Oklahoma City, Oklahoma.
APR.	
3–7	American Chemical Society, Baltimore, Maryland.
11	Pacific Coast District A.P.I. Division of Production, Los Angeles.
13–14	National Petroleum Association, Cleveland, Ohio.
18–19	Mid-Continent District, American Petroleum Institute Division of Production, Oklahoma City.
18–20	Southwest Gas Measuring Short Course, Norman, Oklahoma.
24–29	Oil-World Exposition, Houston, Texas
MAY	
3–5	Petroleum Electric Supply Association, Houston, Texas.
3–5	Petroleum Industry Electrical Association, Houston, Texas.
3–5	Natural Gasoline Association of America, Tulsa, Oklahoma.
15–18	American Petroleum Institute, Mid-Year Meeting, New Orleans, Louisiana.
18–20	National Oil Scouts Association, Houston, Texas.
21–25	National Association of Purchasing Agents, San Francisco.
JUNE	
3	Illinois-Indiana Petroleum Association, Robinson, Illinois.
15–16	Pennsylvania Grade Crude Oil Association, Hershey, Pa.

Contents « March 13, 1939

Volume 93, Number 1

The Changing Panorama.....11-12

Feature Section.....13-41

Oil Industry Affected by Lagging Business..... 13
BY L. J. LOGAN

Empty Tanks Are Sword of Damocles..... 15
BY DAVID B. MCCALMONT

If Proration to Pay It Must Be Accompanied by Development Control..... 18
BY ALEXANDER B. MORRIS

Recent Advances Add Greatly to Aerial Photography Value.... 34
BY FRANK B. TAYLOR

News Section and News Index..... 51

Men in the Industry's News..... 44

World Developments..... 43

Notes for the Equipment Buyer and User..... 89

Squeaks from the Bull Wheel..... 84

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This Week's Panorama

THE meetings of the Interstate Compact Commission and the Texas Railroad Commission at Austin March 15 and 16 probably will be highly interesting and constructive.

Similar meetings held in December resulted in the placing of much valuable information before the industry, and it is indicated that the meetings this week will be of like nature.

Data On Inventories Sought

At the railroad commission hearing in December, oil company executives furnished important information as to actual and desirable crude oil and gasoline inventories, and this week they will be asked to testify similarly concerning present inventories.

Extension of Compact Pushed

Vigorous efforts are being put forth in the oil producing states for extension and enlargement of the Interstate Oil Compact. It is indicated that the compact will be re-enacted in several states and that several states may become new members. Members of the present compact, which expires this year, include Oklahoma, Kansas, Texas, New Mexico, Colorado, and Illinois. All of these states are prospective members of the new compact, although Illinois may decline to participate, because of hesitating to tie strings around its newly developed flush production. There have been some indications that Arkansas might join the compact, and efforts are being made in California to include that state, although approval appears highly doubtful.

Aiding the sponsors of re-enactment of the Interstate Oil Compact are the repeated threats that the federal government will assume regulation of the oil industry if self-control and state regulation prove inadequate to maintain orderly and efficient operation.

Texas Shut-Downs Under Scrutiny

Some misgivings were generated last week by the statement of Lon Smith, chairman of the Texas Railroad Commission, regarding week-end shut-downs of Texas fields. He indicated that Saturday shut-downs might be lifted on April 1 and Sunday closings on May 1, in consequence of the anticipated seasonal increase of petroleum consumption.

Adding another day's production to that of the 5 days now active would be increasing output one fifth or 20 percent, and adding two days' production would be a 40 percent increase.

The only way such increases could be made without disastrous results would be through sharp reductions of the present allowables, and the Texas allowables already have been cut close to the limits set up in the law.

While the Smith statement was disturbing, it was pointed out that Texas so far had consistently held production at reasonable levels and that the railroad commission probably would be guided in its future course by information developed at its March 15 hearing.

Texas Spacing May Be Widened

Clamor for wider spacing of wells and therefore for the drilling of fewer wells has increased in recent months. The subject was brought up in several papers presented at the recent meeting of the American Institute of Mining and Metallurgical Engineers at New York. Last week it was placed in the limelight by both Lon A. Smith, chairman, and Ernest O. Thompson, member, of the Texas Railroad Commission.

In an address at Austin Thompson repeated the assertion that he had made at the AIME meeting at New York that the oil industry was "putting too much money into the ground, drilling too many wells."

Smith last week announced that the Texas Railroad Commission was considering changing the statewide well spacing rule from the present 150 feet between property lines and 300 feet between wells to 330 and 660 feet, respectively. Such a change would substitute a rule of one well to 10 acres instead of the present rule of one well to 2.06 acres. The change would be justified as promoting greater efficiency and more orderly development of fields. The present rule was described by the commission as leading to excessive and uneconomic drilling and to the necessity of granting many exceptions to the rule.

Efficiency-Proration Advocated

An idea that is being stressed currently in connection with proration is the desirability of holding production of all fields down to the rate which will result in the most efficient utilization of the reservoir energy.

Several speakers at the AIME meeting in New York in February urged the application of this idea, and some added that a field should be restricted either to its most efficient rate or to market demand, whichever is lower.

Ernest O. Thompson, chairman of the Interstate Oil Compact Commission and member of the Texas Railroad Commission, has several times declared that oil proration should be based on preservation of

underground pressures; that this basis is employed in prorating the East Texas field.

Thompson and others interested in proration have pointed out that if every oil field in the country were similarly restricted to the most efficient output, there might be no production in excess of market requirements. Under such conditions, there would not be controversy among the states as to equitable division of available markets. Each state would be producing what it could efficiently produce. And the only proration would be among the oil producers in the different fields.

Larger Crude Runs Force Gasoline to Storage

THE latest weekly statistics of the oil industry offered some encouragement with regard to the gasoline situation, as a slowing down of additions to storage in the face of large production of that product indicated that current gasoline demand was comparatively good.

The increased refinery runs of the week represented, however, a matter for some anxiety, as they indicated that refiners were not sufficiently conservative in regulating their throughput of crude.

Having increased 782,000 barrels within the week, the stocks of finished and unfinished gasoline in the United States totaled 85,379,000 barrels on March 4. At that time they were, therefore, about 5,000,000 barrels larger than they would need to be on March 31, four weeks later.

There is some danger, moreover, that the gasoline surplus will become considerably larger in the remaining four weeks until the end of March, in view of the recent sharply rising trend of refinery runs.

In the week ended March 4, the crude runs to stills averaged 3,230,000 barrels daily, which was 45,000 barrels a day more than in the previous week, and 105,000 barrels a day more than two weeks before. At the new rate, the runs were 3.2 percent larger than in the corresponding week last year, when they averaged 3,130,000 barrels daily.

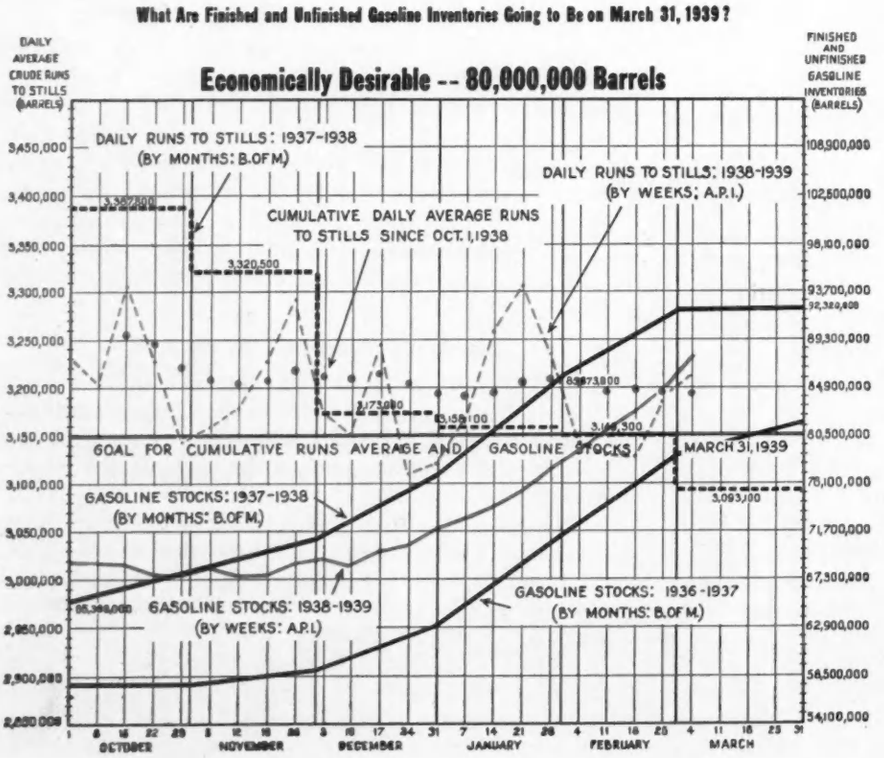
The accompanying chart shows the trends of refinery runs and fluctuations of gasoline stocks during the present fall-winter season; and inasmuch as March 31 is only several weeks away, the chart shows fairly well what the gasoline inventory situation is likely to be when the industry enters the spring-summer consuming season.

The chart takes into consideration an expected increase of about 4 percent in gasoline consumption in 1939 and the probable recoveries of gasoline from crude. It indicates that cumulative daily average crude runs of 3,150,000 barrels daily for the fall-winter season would have resulted in the economically desirable March 31 gasoline stocks of 80,500,000 barrels. But through the week ended March 4 the cumulative runs actually had averaged 3,196,818 barrels daily, as indicated on the chart by the last red dot on the right. Up to now, therefore, the industry has been moving during the fall-winter season toward a March 31 gasoline inventory of approximately 85,000,000 barrels, which happens to be the present inventory position. And if the stocks should be held within 85,000,000 barrels through March 31, it would be necessary to restrict refinery runs to a daily average of not over 3,200,000 barrels throughout March.

In the week ended March 4, however, as pointed out above, the runs were not quite that low, having averaged 3,230,000 barrels daily. During that week, the industry consequently was moving toward a March 31 inventory somewhat in excess of 85,000,000 barrels.

It remains to be seen how much crude will be processed by the refiners in the four weeks remaining until March 31 and whether or not gasoline stocks will be further increased substantially. But it is indicated that additions to the gasoline stocks in March may be held down to comparatively small proportions, if refiners will process only currently produced crude and no storage oil. For the leading producing states are curtailing crude production in close conformity with the Bureau of Mines estimates of demand during March, and the bureau's calculations did not make provision for processing any crude to increase gasoline storage, no need for further building up of the gasoline stocks in March having been anticipated. Consequently, if refiners process only currently produced oil, gasoline stocks should remain about stationary during the month.

What Are Finished and Unfinished Gasoline Inventories Going to Be on March 31, 1939?



Oil Industry Affected By Lagging Business

Trends of industrial activity have been sidewise several months . . . But turn is expected soon, and hope is held for move upward rather than downward.

By L. J. LOGAN, Associate Editor

GENERAL business trends, which constantly are exerting a dominant influence on the oil industry as well as on other lines, have continued sidewise; and the uncertainties in the general business picture naturally have tended to partially cloud the oil industry outloook.

Industrial Production Lags

The Federal Reserve Board recently reported that industrial production increased less than seasonally in January and the first three weeks of February, following the rapid advance in the latter half of 1938. The board's seasonally adjusted index of industrial production stood at 101 for January, compared with 104 in December.

Steel mill production continued about as in December, whereas an increase usually occurs in January and February; and non-durable goods also failed to show the usual seasonal advance. Automobile production declined seasonally, and factory employment in the aggregate showed the usual seasonal decline. In trade, employment declined more than normally.

The Department of Commerce in a recent survey stated that no pronounced trend of business was currently in evidence.

The American Federation of Labor has made a published plea for vigorous efforts to expand production in private industry in order to prevent another business recession in 1940. Encouragement of private industry is needed, according to the labor organization, to replace government spending by private investment and to put the unemployed to work in private industry instead of on PWA projects. Meanwhile, stated the labor union survey, business observers are deferring their expectations of further recovery until the second quarter of 1939.

General Outlook Clouded

Regarding the general business outlook, the National Association of Purchasing Agents in its latest monthly bulletin stated:

"With the continuous absence of improvement within the general business structure of the country, there has disappeared a great deal of the optimism pertaining to commercial volume during the first portion of 1939. At the moment there is very little industrial expansion under way, and it becomes increasingly difficult to envision definite factors that would indicate any noticeable upturn in the trend of industrial affairs in the immediate weeks to come. There is no lack of sentiment that 'the situation still remains hopeful despite some downturn in production and distribution,' nor is there any widespread opinion that drastic decline is apt to occur in business volume."

The unsettled foreign situation remains an important deterrent to business, the threats of war and possibilities of additional crises having delayed trade expansion.

The situation of the agricultural population also has unfavorable implications. Commodity prices have failed to show any important improvement. Exports of farm products have declined. And farm income has continued comparatively low.

Although the business recovery has slowed down, much of the prevailing sentiment remains cheerful, and various favorable factors may be cited.

High on the list of promising developments is the new, friendlier attitude of the federal government toward business, although many business men naturally view the advances of the administration with doubt or suspicion, following the several years of "reform," sponsored by the administration. Such doubt naturally would be felt particularly in the oil industry, in view of the Madison experience.

Among business trends and developments themselves, moreover, some have been of encouraging nature.

Inventories Are Low

A further decline in industrial inventories since the beginning of the year has been reported by the National Association of Purchasing Agents. The association, in its monthly survey of business, suggested that the absorption of inventories had lost its force as a bullish factor, as small stocks were counteracted in many cases by lack of requirements. It was further suggested that purchases probably would be held at conservative levels pending developments. Nevertheless, it must be conceded that the small inventories would be conducive to a comparatively vigorous expansion of industrial production and trade in the event of a definite revival of confidence.

Pump Priming in Progress

The expected acceleration of the flow of pump-priming funds during the next several months also offers the promise of business stimulation, regardless of the head-

ache that may be experienced in the indefinite future when the bill is paid. Pump-priming expenditures have been running a little above $250,000,000 a month, but they probably will average around $350,000,000 a month or more in the next several months.

Automobile Output Brisk

Another factor of encouraging nature is the anticipated increase in automobile production in coming months. The automobile industry has taken a leading role in the current recovery movement, as well as in that following the 1929-1932 depression, and it promises to continue going ahead. Automobile production is expected to be about 25 percent larger in March than in February and therefore about 70 percent greater than in March of last year. The production of automobiles and trucks in the United States and Canada for the first quarter of 1939 probably will be a little over 1,000,000 units, or about 60 percent greater than in the corresponding period last year. For the second quarter of 1939 it is indicated that production may be about 10 percent greater than in the initial quarter and therefore about 75 percent larger than in the second quarter of 1938. The relatively high levels of business in the automobile industry will be conducive to good business also in the numerous lines which supply the industry with materials and parts.

The movement of freight by highway motor trucks in January was more than 25 percent greater than in January of last year, according to the American Trucking Association.

Home Construction Active

Home building also continues active and will contribute to general business, as construction work affects so many workers and industries. In the first 8 weeks of 1939, lumber production was 26 percent larger than in the corresponding period of 1938, shipments were up 15 percent, and new orders were 6 percent higher, according to the National Lumber Manufacturers' Association.

Although commodity prices and farm income have continued relatively low, some encouragement is offered by the fact consumer demand for farm products has been increasing a little and probably will run higher throughout 1939 than in 1938.

Finally, some hope of an early resumption of the recovery movement is offered in the recent and current trends of business. For almost four months business has been moving sidewise. Such a trend rarely continues for more than several months at a time. Consequently, a turn, either upward or downward, appears to be due soon. And most observers feel confident that the turn will be upward rather than downward.

Oil Demand Good

From the standpoint of demand for its products, the oil industry continues to fare better than many other lines. This year is bringing a fulfillment of the New Year forecasts of somewhat better demand in 1939 than in 1938, estimates having indicated gains of 4 to 5 percent in demand for both gasoline and petroleum products in the aggregate.

Domestic consumption of petroleum has been running about according to expectations. Foreign shipments, particularly of gasoline, held up well in the early weeks of the year, but exports subsequently have declined.

The Bureau of Mines forecast of petroleum demand for March showed the anticipation of further improvement in total demand for gasoline, because of an expected gain in exports. The forecast indicated that the total gasoline demand would be 4.7 percent greater in March, 1939, than in March, 1938. Domestic consumption was expected to be up 4 percent and exports were expected to be 10.9 percent larger than they were last March.

Supply Trend High

Although petroleum demand is relatively favorable, the industry continues to experience difficulty in holding supply down in line with requirements. This difficulty is encountered both in the oil fields and at the refineries. And trouble in properly curtailing crude production and refinery runs continues to have some unsettling effect on the markets for crude oil and finished products.

All danger of further reductions of crude prices has not been eliminated. February allowables in some of the prominent producing states were larger than economically justified, and they promoted some increase in crude oil storage and a greater than desirable build-up of gasoline stocks.

For March, however, the allowables are closely in line with indicated market demand, and crude production probably will not be seriously excessive.

The moderate crude production perhaps will prove conducive, moreover, to satisfactory regulation of refinery runs and to the holding down of gasoline inventories.

Some improvement in the overall curtailment of petroleum supply is in prospect for March, therefore; and consequently, the markets of the industry also may show some improvement.

Bureau of Mines Forecasts Reflect Trends of Demand

(Barrels)

MONTH	Total Demand for Domestic Crude	MOTOR FUEL DEMAND		
		Domestic	Export	Total
October 1938:				
October, 1938, forecast	104,370,000	45,800,000	4,400,000	50,200,000
October, 1937, actual	111,984,000	45,361,000	3,830,000	49,191,000
Change from year ago	—6.8%	+1%	+14.9%	+2.0%
November:				
November, 1938, forecast	101,740,000	42,700,000	3,800,000	46,500,000
November, 1937, actual	107,264,000	42,666,000	3,309,000	45,975,000
Change from year ago	—5.5%	—0.1%	+14.8%	+1.1%
December:				
December, 1938, forecast	102,480,000	40,100,000	3,300,000	43,400,000
December, 1937, actual	106,921,000	39,465,000	2,442,000	41,907,000
Change from year ago	—4.2%	+1.6%	+35.1%	+3.6%
January, 1939:				
January, 1939, forecast	101,390,000	36,230,000	3,400,000	39,630,000
January, 1938, actual	104,619,000	35,176,000	3,090,000	38,266,000
Change from year ago	—3.1%	+3%	+10%	+3.6%
February:				
February, 1939, forecast	90,160,000	33,400,000	3,400,000	36,800,000
February, 1938, actual	93,734,000	31,861,000	3,931,000	35,792,000
Change from year ago	—3.7%	+4.9%	—13.5%	+2.8%
March:				
March, 1939, forecast	103,540,000	42,950,000	4,000,000	46,950,000
March, 1938, actual	103,273,000	41,259,000	3,562,000	44,821,000
Change from year ago	+0.2%	+4.0%	+10.9%	+4.7%

Empty Storage Tanks Are The Sword of Damocles

Reduction of crude prices at a time when oil is being withdrawn from storage is denounced by head of independent association.

* * * *

Fear expressed that existence of 340,000,000 barrels of empty tanks is a temptation for further reductions in crude prices.

By DAVID B. McCALMONT, President
Central Pennsylvania Oil Producers' Association

ON May 31, 1938, stocks of Pennsylvania Grade crude oil amounted to 5,345,007 barrels (N. P. A. figures). The price posted at that time by The Pennzoil Company, for the Oil City district, was $1.98 per barrel and the Penn'a Grade refineries were then grievously burdened with excessive stocks of finished and semi-finished oils.

Early in June the price was reduced to $1.73 and, in September, was further cut to $1.61 per barrel. The latter reduction was deemed unwarranted and met with severe criticism from the oil producer.

On December 31, 1938, stocks of Pennsylvania Grade crude oil had increased 106,400 barrels to 5,451,417, about 500 barrels per day.

During this seven month period stocks of finished and semi-finished oils at refineries were reduced 550,000 barrels, to a total of 2,269,100 barrels, a reduction of more than 2,500 barrels per day and one-fifth of the gross volume of such stocks on hand at May 31.

During January, 1939, stocks of Pennsylvania Grade crude have been reduced by 90,000 barrels (Bureau of Mines figures) and are thus almost at the same level as at May 31. Two small advances have brought the price to $1.81 per barrel, just seventeen cents (17c) less than the price at May 31, 1938.

The weekly reports of finished and semi-finished oils at refineries are no longer published. Thus the oil producer is now permitted to view but one side of the picture and therefore is unable to judge for himself whether or not the posted price is fair. Quite naturally, he seeks the reason for the suppression of this information and, equally naturally, suspects the worst.

Yet the Pennsylvania Grade situation is far better today than it was a year ago and we should be very hopeful for the future, were it not for the dangerous situation in the Western fields.

The Menace of the Empty Tanks

The report on storage of crude oil in the United States, published by the Bureau of Mines, contains startling information. Its figures are for June 30, 1936, but are easily brought up to date.

The total available tankage for crude oil in the United States amounts to 583,478,000 barrels and nearly all of this, or 580,000,000 barrels, is good steel tankage. This enormous tankage includes no lease storage by producers or tankage of heavy and fuel oils in California.

The Bureau of Mines further reported that the oil tanked for many years is still good merchantable crude, fit even for gasoline production.

At the end of January, 1939, the total stocks of crude oil, again excluding the heavy and fuel oils of California, amounted to but 272,000,000 barrels, the lowest for 17 years. Of this comparatively small amount, 21,000,000 barrels is contained in the pipe lines themselves and 11,000,000 barrels is held by producers on their leases. Subtracting these amounts, we find that the available crude oil in tankage now amounts to but 240,000,000 barrels, about 74 days supply for our refineries at their present rate of consumption.

Five hundred eighty million barrels of good steel tankage and only 240,000,000 barrels of oil leaves 340,000,000 barrels of empty steel tankage, in the possession of the large, well-financed companies. What does this mean to the oil producer? Let us see!

Empty tankage is useless and deteriorates more rapidly than when filled. If the price of Mid-continent and Texas crudes should break to 20 or 25 cents per barrel, a fabulous profit could be made with these empty tanks.

Are the owners of this empty tankage able and willing to smash crude oil to panic prices? The

answer is "Yes!"; for the temptation is very great.

For the past 12 months the producer has held production within consumption demand. During this time thousands of producers, especially in the "stripper well" areas, have been deprived of their usual market outlets and forced to shut down their wells or sell their oil at sacrifice prices.

During this period the major companies drew from storage 32,500,000 barrels of — double the amount required to have preserved the markets for the owners of these stripper wells.

Then the major companies cut the posted price of oil, giving as their reason that distress crude oil, going to other refineries at a sacrifice, created finished products at prices which they were unable to meet.

The major companies are taking more and more of their requirements from the flush fields and less and less from the fields of settled production. The struggle of these producers, "in the period between prostration and death," forces them again to sell their oil at a sacrifice. It is estimated that from 30,000 to 50,000 barrels of oil per day is now being forced upon the market at distress prices.

Again we hear the wail of the major companies—that crude oil is being sold below the posted price—and again there is threat of further price reductions.

Imports of crude oil still further increase the burden of the producer and even oil from the expropriated leases of Mexico is reaching Texas at prices ruinous to the American producer.

The critical point has now been reached. Colonel Ernest O. Thompson, of the Texas Railroad Commission and Inter-state Compact Committee, has announced that unless a way is immediately found to protect Texas from the competition of cheap oil, he will recommend that Texas lift its proration schedules. Should this happen, other states will follow and disaster will overtake the oil producer such as he has not witnessed since the flush days of the East Texas field. Crude prices will drop like a bomb over Madrid and the days when East Texas crude was sacrificed at four cents (4c) per barrel will be forcibly recalled.

Who will buy this crude oil when the flood gates are opened, the wells producing to capacity and crude oil offered at 20 cents per barrel? The only possible purchasers are the owners of the 340,000,000 barrels of empty storage tanks.

Before these empty tanks are filled, independent refiners and producers will have practically ceased to exist—their holdings will have automatically passed into the hands of the major companies.

Will not such a cataclysm force government control of the oil industry? Probably! But before this can take place the damage will have been done and thousands of independent producers and refiners will have joined the ranks of the unemployed.

When the East Texas field was first opened, an overwhelming majority of its acreage was owned by independents. After the cataclysm, when stability had been secured, the overwhelming preponderance of the acreage was owned or controlled by the major companies. Thus the flush fields of Illinois and Michigan, largely owned by independents, constitute an increased temptation to the major companies at this time.

It is the old, old story. The major companies use oil from their own storage for their requirements. The producer, his market gone, offers his crude oil for what he can get. Down goes the price to panic figures! The major companies buy such leases and acreage as they desire at their own figures. The stored oil is replaced. Stability is re-established. The price goes up. Thus the stage is again all set for another and similar performance.

With each such cycle, the number of independent producers and refiners grow less, and the percentage owned by the majors grows larger.

Interstate Compact Is Hope

The empty storage tanks hang over the oil producer like the Sword of Damocles, suspended by a slender thread. That thread is the Inter-state Compact Commission. If the states maintain their strict conservation schedules—or tighten them—the day must soon come when the major companies, stocks of oil reduced to the danger point, must satisfy their requirements from current production.

The oil producer must get the ear of the present Congress. If the major companies will not take their quotas of oil equitably, they must be made to do so. Imports of foreign oil must be further curtailed and those from Mexico prohibited.

The old system of using withdrawals from crude oil storage to depress crude prices and then filling the empty tanks with oil at distress prices ought to die. The oil producer, through the conservation bodies of the several states and his representatives in Congress, has the power to execute this well-merited "death sentence."

In submitting the accompanying article to us for publication, Mr. McCalmont wrote:

"It is entirely possible that this article will not coincide with your views. The OIL WEEKLY is famous for giving fair publicity to both sides of economic as well as political questions. This article, representing the views of a large number of independent producers all over the United States, is submitted to you on that account."

The OIL WEEKLY is glad to publish Mr. McCalmont's statement as representing the views of a large part of the independent group.

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If Proration Is To Pay It Must Be Accompanied By Development Control

By ALEXANDER B. MORRIS, Petroleum Engineer

In The OIL WEEKLY of November 7, 1938, a call was issued for the submission of "facts, not theories" that would show whether or not proration is a paying proposition, and if so, who receives its various benefits. It was felt that the publication of such material would be timely.

The accompanying article is in response to that call.

IT is a difficult matter to develop any pure facts, unadulterated by theories, in connection with the question "Does proration pay?"

In the first place, proration has several important phases or aspects, so that when one person speaks of proration another does not necessarily know exactly what is being referred to. It is, therefore, necessary to define just what is meant by the word proration. Herein, proration will be considered to refer to control of per well allowables without regard to the basis upon which these are determined or the motivating reasons for putting it into effect. It is proposed to show that for one area, at least, proration, coupled with controlled development, has resulted in economic advantages over unrestricted operation; and that in another area, where proration has been applied without concomitant effective control or development, financial loss to the industry in that locality has resulted, over and above what would have resulted had output of the well not been limited.

In the second place, it would be pointless to attempt to show how some field, developed and produced without restriction, might have behaved had it been prorated according to some outlined plan; or to show how some present day prorated field might have behaved had all restriction been absent.

Anyone can draw such a picture to suit himself, and can shape it to support his own private views; and there are enough highly controversial factors involved to give the color of actuality to almost any reconstruction. This is obviously just the sort of thing that the editors did not want.

However, if two identical fields can be found, one of which was developed and operated without restrictions, while the other has been under control throughout its life—this being the only essential difference between them—then perhaps something like an acceptable body of facts bearing upon that particular type of control can be developed.

Burbank Fields Example

Burbank and South Burbank, in Osage County, Oklahoma, form an ideal pair for such a study. Both are producing from the same sand body and from approximately the same depth. In fact, South Burbank is a southern extension of Burbank, with only a narrow unproductive strip between them. The character of the oil is the same; the formation pressures are the same, as nearly as can be estimated from the rather imperfect records of the older pool; the gas-oil ratios are the same, and most of the characteristics of the sand in the two localities are the same. There is a greater degree of similarity between these two areas, on the average, than there is between various parts of either of them. Old Burbank has been producing for 19 years, with the average age of the wells over 15 years. It was developed on a 10-acre pattern, and each quarter section tract was drilled up as quickly as possible. The only check to the almost simultaneous drilling of the entire area was the fact that all the tracts were not offered for sale by the government at the same time. This spread the period of development of the field as a whole over five or six years, but large areas within the field were developed simultaneously, and all wells in the field were produced at full capacity for as long as possible. The rate of decline was very rapid at first, but soon settled down to a typical Bartlesville sand decline. Sufficient records of past production are available to make possible very close estimates of the ultimate production from the whole field, or any part of it.

South Burbank

South Burbank was opened up late in 1933 and has been under careful control almost from the first. A drilling pattern having close relation to the characteristics of the underlying sand body has been adopted, and the output per well has been severely restricted. The central area was early put under unitized control, and soon thereafter a pressure maintenance program was instituted under which almost all the residue gas produced with the oil is returned to the sand. At the end of 1938, after five years of operation, the formation pressure has dropped only about 50 percent. At present better than 50 percent of the total gas volume produced is being returned to the reservoir.

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Tables 1 and 2 show respectively for Burbank and for South Burbank, the development and production histories of the two areas. Estimates of future production and ultimate production for the old field are given, as are the corresponding recoveries per acre, based upon the approximate number of proven acres involved. No estimates of future or ultimate production are here attempted for South Burbank, but certain conclusions, referred to later, appear to be inescapable.

In presenting these production figures for both fields, parts of each were omitted, and only those tracts for which consistent production records over a long period of time were available to the writer have been included. Referring to the map, Figure 1, the shaded areas in old Burbank (NE-SW hachure

TABLE 1

Old Burbank Field

Rate of development and production, by months through 1923 and by years through 1936, of specified areas, and estimates of future and ultimate recovery.

MONTH	Tracts Opened Prior to Jan. 1, 2924			92 Shaded Tracts 13,430 Acres	BLOCK "A"		BLOCK "B"		BLOCK "C"		BLOCK "D"
	No. of Tracts	No. of Wells	Gross Barrels	Gross Barrels	No. of Tracts	1,380 Acres 129 Wells	No. of Tracts	1,440 Acres 144 Wells	No. of Tracts	1,440 Acres 134 Wells	1,300 Acres 130 Wells
1920											
May	1	1	12,770	.....	...	.....	...	.....	...	.....	.....
June	1	1	15,627	.....	...	.....	...	.....	...	.....	.....
July	1	1	15,256	.....	...	.....	...	.....	...	.....	.....
August	1	1	14,649	.....	...	.....	...	.....	...	.....	.....
September	2	2	15,606	.....	1	2,532	...	.....	...	.....	.....
October	2	2	15,156	.....	1	2,280	...	.....	...	.....	.....
November	4	4	20,426	.....	2	8,049	...	.....	...	.....	.....
December	6	6	37,031	.....	2	6,859	...	.....	...	.....	.....
Total	...	...	146,521	146,521	...	19,720	...	.....	...	.....	.....
1921											
January	9	9	70,299	.....	2	7,804	1	29,492	...	.....	.....
February	14	16	90,243	.....	6	26,538	2	27,759	...	.....	.....
March	16	22	136,055	.....	6	55,055	2	31,304	...	.....	.....
April	19	29	164,418	.....	6	66,791	2	27,721	...	.....	.....
May	22	34	224,421	.....	6	85,050	2	28,291	...	.....	.....
June	22	40	247,646	.....	6	89,523	2	25,297	...	.....	.....
July	22	44	328,045	.....	6	146,992	2	22,612	...	.....	.....
August	24	58	499,899	.....	6	174,891	2	40,615	...	.....	.....
September	24	68	580,282	.....	6	189,203	2	54,383	...	.....	.....
October	29	81	773,906	.....	8	262,001	3	56,837	...	.....	.....
November	31	97	805,171	.....	8	243,932	3	107,891	...	.....	.....
December	33	112	925,450	.....	8	236,144	4	149,558	...	.....	.....
Total	...	...	4,845,835	3,294,210	...	1,583,724	...	601,760	...	.....	.....
1922											
January	35	154	1,066,005	.....	8	**262,219**	5	166,092	...	.....	.....
February	39	193	1,191,784	.....	9	241,748	5	217,815	...	.....	.....
March	44	241	1,506,876	.....	9	260,432	8	481,786	...	.....	.....
April	49	286	1,623,005	.....	9	229,599	8	585,149	1	7,686	.....
May	51	349	2,071,742	.....	9	228,066	8	**770,476**	1	45,432	.....
June	56	413	2,273,782	.....	9	243,120	9	694,650	3	141,840	.....
July	57	490	2,337,018	.....	9	213,853	9	588,076	3	184,171	.....
August	59	569	2,224,920	.....	9	210,056	9	595,854	3	242,935	.....
September	65	635	2,188,577	.....	9	207,699	9	506,973	5	211,202	.....
October	68	677	2,429,073	.....	9	182,674	9	460,268	6	291,478	.....
November	71	740	2,547,006	.....	9	158,123	9	353,767	6	666,253	.....
December	72	771	**2,657,159**	.....	9	156,333	9	290,677	6	996,409	.....
Total	...	...	24,116,947	18,274,261	...	2,593,922	...	5,751,583	...	2,787,406	.....
1923											
January	74	810	2,104,027	.....	9	148,592	9	230,945	6	1,026,923	.....
February	74	828	2,072,848	.....	9	131,459	9	180,984	6	803,048	.....
March	78	860	2,057,407	.....	9	137,423	9	174,228	9	810,697	.....
April	80	938	2,541,522	.....	9	131,771	9	162,785	9	**1,257,495**	.....
May	83	970	2,525,940	.....	9	133,031	9	166,938	9	1,254,979	.....
June	90	1,010	2,532,020	.....	9	123,807	9	149,991	9	912,650	.....
July	90	1,021	2,564,032	.....	9	122,891	9	102,466	9	611,865	.....
August	90	1,039	2,226,061	.....	9	118,548	9	96,283	9	533,249	.....
September	90	1,057	1,907,388	.....	9	104,332	9	114,138	9	413,000	.....
October	93	1,052	1,926,510	.....	9	109,300	9	113,217	9	374,471	.....
November	93	1,053	1,677,365	.....	9	98,676	9	102,508	9	328,118	.....
December	93	1,053	1,551,022	.....	9	95,980	9	101,774	9	317,987	.....
Total	...	...	25,685,845	20,666,963	...	1,455,810	...	1,696,257	...	8,644,482	.....
1924	...	...	14,806,136*	14,830,738	9	892,696	9	776,361	9	2,275,231	533,354
1925	93	...	6,704,911*	10,311,904	9	657,660	9	443,210	9	1,075,696	2,982,386
1926	93	...	4,595,914*	8,927,328	9	547,110	9	318,937	9	602,631	3,044,991
1927	93	...	3,400,948*	6,828,772	9	423,787	9	235,607	9	403,659	1,364,140
1928	93	...	2,482,674*	4,335,236	9	283,422	9	196,927	9	289,113	615,515
1929	93	...	1,924,755*	2,869,425	9	192,426	9	150,074	9	231,220	446,942
1930	93	...	1,693,157*	2,386,618	9	167,431	9	128,299	9	207,836	425,070
1931	93	...	1,501,855*	2,105,295	9	146,667[7]	9	111,462[1]	9	177,736	403,058[2]
1932	93	...	1,322,273*	1,824,323	9	135,802[7]	9	100,478[1]	9	144,685	328,618[2]
1933	93	...	1,256,683*	1,731,831	9	127,401[7]	9	93,671[1]	9	130,833	306,327[2]
1934	93	...	1,183,179*	1,662,370	9	119,078[7]	9	91,140[1]	9	135,504	328,913[2]
1935	93	...	1,092,755*	1,575,600	9	112,510[7]	9	84,911[1]	9	140,070	319,141[2]
1936	93	...	1,041,138*	1,511,966	9	107,614[7]	9	77,927[1]	9	137,221	307,291[7]
Total to December 31, 1936	...	...	97,801,526	103,283,361	...	9,566,980	...	10,858,604	...	16,383,323	11,405,746
Estimated Future	...	...	15,000,000	20,100,000	...	1,543,000	...	1,000,000	...	1,957,000	4,512,000
Estimated Ultimate	...	...	112,801,526	123,383,361	...	11,109,980	...	11,858,604	...	18,340,323	15,917,746
Recovery per acre Through 1936	...	...	.....	7,700	...	6,930	...	7,550	...	11,350	8,800
Estimated Ultimate	...	...	.....	9,200	...	8,050	...	8,250	...	12,750	12,200

NOTES:

Black face indicates peak month.

*Estimated for 93 tracts opened prior to 1924, on basis of actual production records from 61 of these tracts.

[1, 2, 7] Indicate the number of individual tracts in each group for which production records were missing for these years. Estimated values used

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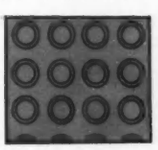
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TABLE 2

South Burbank Field

Rate of development and production, by months, for all tracts producing throughout 1938

MONTH	TOTAL			UNITIZED AREA			AREA OUTSIDE UNIT		
	No. of Tracts	No. of Wells	Gross Barrels	No. of Tracts	No. of Wells	Gross Barrels	No. of Tracts	No. of Wells	Gross Barrels
1933									
December	1	1	1,269	1	1	1,269	...	...	.....
Total	...	...	1,269	...	...	1,269	...	...	.....
1934									
January	1	1	25,694	1	1	25,694	...	...	.....
February	2	2	49,208	2	2	49,208	...	...	.....
March	5	8	198,254	5	8	198,254	...	...	.....
April	10	19	111,850	9	18	106,762	1	1	5,088
May	10	24	117,939	9	23	109,392	1	1	8,547
June	11	27	154,637	9	25	136,306	2	2	18,331
July	13	42	187,542	11	27	167,786	2	5	19,756
August	14	49	251,697	12	43	220,707	2	6	30,990
September	15	54	229,960	13	48	205,542	2	6	24,418
October	15	56	236,418	13	49	211,274	2	6	25,144
November	19	62	268,316	15	54	225,559	4	8	42,757
December	19	66	253,146	15	57	217,553	4	9	35,593
Total	...	...	2,084,641	...	...	1,874,017	...	...	210,624
1935									
January	19	72	291,160	15	59	247,355	4	13	43,805
February	19	72	263,945	15	59	221,440	4	13	42,505
March	19	72	300,841	15	59	254,024	4	13	46,817
April	19	72	300,712	15	59	252,961	4	13	47,751
May	19	72	307,043	15	59	258,252	4	13	48,791
June	21	80	306,050	17	68	†263,751	4	12	42,299
July	21	84	314,505	17	70	272,196	4	14	42,309
August	21	93	303,386	17	76	252,505	4	17	50,881
September	21	101	291,203	17	83	233,964	4	18	57,239
October	21	102	289,712	17	84	237,620	4	18	52,101
November	21	108	304,590	17	90	249,757	4	18	54,833
December	21	114	325,059	17	91	259,020	7	23	66,039
Total	...	...	3,598,215	...	...	3,002,845	...	...	595,370
1936									
January	24	120	336,334	17	94	256,366	7	26	79,968
February	24	123	333,402	17	93	258,066	7	30	75,336
March	24	128	414,037	17	98	320,434	7	30	93,603
April	25	131	454,300	17	98	**348,241**	8	33	106,059
May	30	140	463,748	17	98	334,812	13	42	128,936
June	30	148	440,182	17	98	304,118	13	47	136,064
July	30	164	429,747	17	110	286,230	13	54	143,517
August	32	173	451,135	17	114	291,434	15	59	159,701
September	33	177	440,243	17	115	290,270	16	62	149,973
October	33	185	447,560	17	118	289,046	16	67	158,514
November	33	189	404,162	17	119	251,002	16	70	153,160
December	34	201	471,701	17	123	292,681	17	78	**179,020**
Total	...	...	5,086,551	...	...	3,522,700	...	...	1,563,851
1937									
January	34	202	472,935	17	123	296,012	17	79	176,923
February	34	202	421,089	17	123	266,599	17	79	154,500
March	34	203	**478,039**	17	123	317,038	17	80	161,001
April	34	206	453,172	17	124	296,056	17	82	157,116
May	34	206	450,120	17	124	294,893	17	82	155,227
June	34	206	456,527	17	124	297,378	17	82	159,149
July	34	206	460,276	17	124	306,372	17	82	153,904
August	34	206	473,037	17	124	310,471	17	82	162,566
September	35	207	409,719	17	124	272,529	18	83	137,190
October	35	207	406,944	17	124	266,148	18	83	140,796
November	35	207	379,168	17	124	244,515	18	83	134,653
December	35	207	408,667	17	124	268,875	18	83	139,792
Total	...	...	5,269,703	...	...	3,436,886	...	...	1,832,817
1938									
January	35	207	406,727	17	124	267,154	18	83	139,573
February	35	207	307,697	17	124	200,748	18	83	106,949
March	35	207	337,671	17	124	222,897	18	83	114,774
April	35	207	308,640	17	124	211,790	18	83	96,850
May	35	207	310,894	17	124	205,319	18	83	105,575
June	35	207	289,142	17	124	191,882	18	83	97,260
July	35	207	305,974	17	124	204,442	18	83	101,532
August	35	207	302,065	17	124	203,695	18	83	98,370
September	35	207	294,212	17	124	196,814	18	83	97,398
October	35	207	301,064	17	124	203,677	18	83	97,387
November	35	207	262,779	17	124	175,220	18	83	87,551
December Estimated	...	...	263,135	17	124	176,362	...	...	86,773
Total	...	...	3,690,000	...	...	2,460,000	...	...	1,230,000
Grand Total	...	...	19,730,379	...	...	14,297,717	...	...	5,432,662
Approximate proven acres	...	...	3,920	...	...	2,120	...	...	1,800
Recovery per acre through 1938	...	...	5,030	...	...	6,750	...	...	3,000

NOTES—**Black face** indicates peak month.
† Unit organized and began operating in June, 1935.

lines), are those for which such records have been compiled. It will be seen that they pretty well cover the field. These are the "92 Shaded Tracts" referred to in the second division of Table 1. In the extreme left hand portion of Table 1 is set forth the actual production, by months, of the first 94 tracts to be opened up in the field, through 1923. Thereafter, the annual production from these 94 tracts has been estimated on the basis of 61 of them which are included in the 92 tracts for which actual records through 1936 are given. In order to show the production behavior of concentrated areas in various parts of the field, the actual histories of four blocks, each consisting of nine quarter sections in the form of a square, are also given. It will be observed that the ultimate recovery per acre increases toward the northern part of the field, being slightly above 8000 barrels for Block "A" and 12,750 barrels for Block "C." The average for all the 92 tracts is 9200 barrels per acre. Repressuring operations may result in increasing these to some extent, but this is not important for this discussion.

The areas on the map shaded with NW-SE hachure lines are those in the South Burbank field for which production records are given in Table 2. The boundaries of the unitized area are shown. Only tracts which were producing throughout 1938 are included in this study, but for these the records are complete.

Differences Between Fields

Some apparent differences between these two fields should now be commented upon and resolved if possible. Melcher[1] gives a table of porosities for old Burbank wells, listing 82 samples from 32 wells, fairly well distributed over the field. The range of these porosities is from 9 percent to 30 percent with the average at 20.5 percent. Markham and Lamar[2] state with respect to South Burbank, that insufficient sampling has been done, but that such tests as have been made indicate a range from 14 percent to 25.8 percent with the average probably about 17 percent. These results are not strictly comparable with those reported by Melcher, for the samples from Burbank were fragments blown from the wells or removed in the bailer during cleaning out, whereas those in the South Burbank area were from carefully cut cores. This prob-

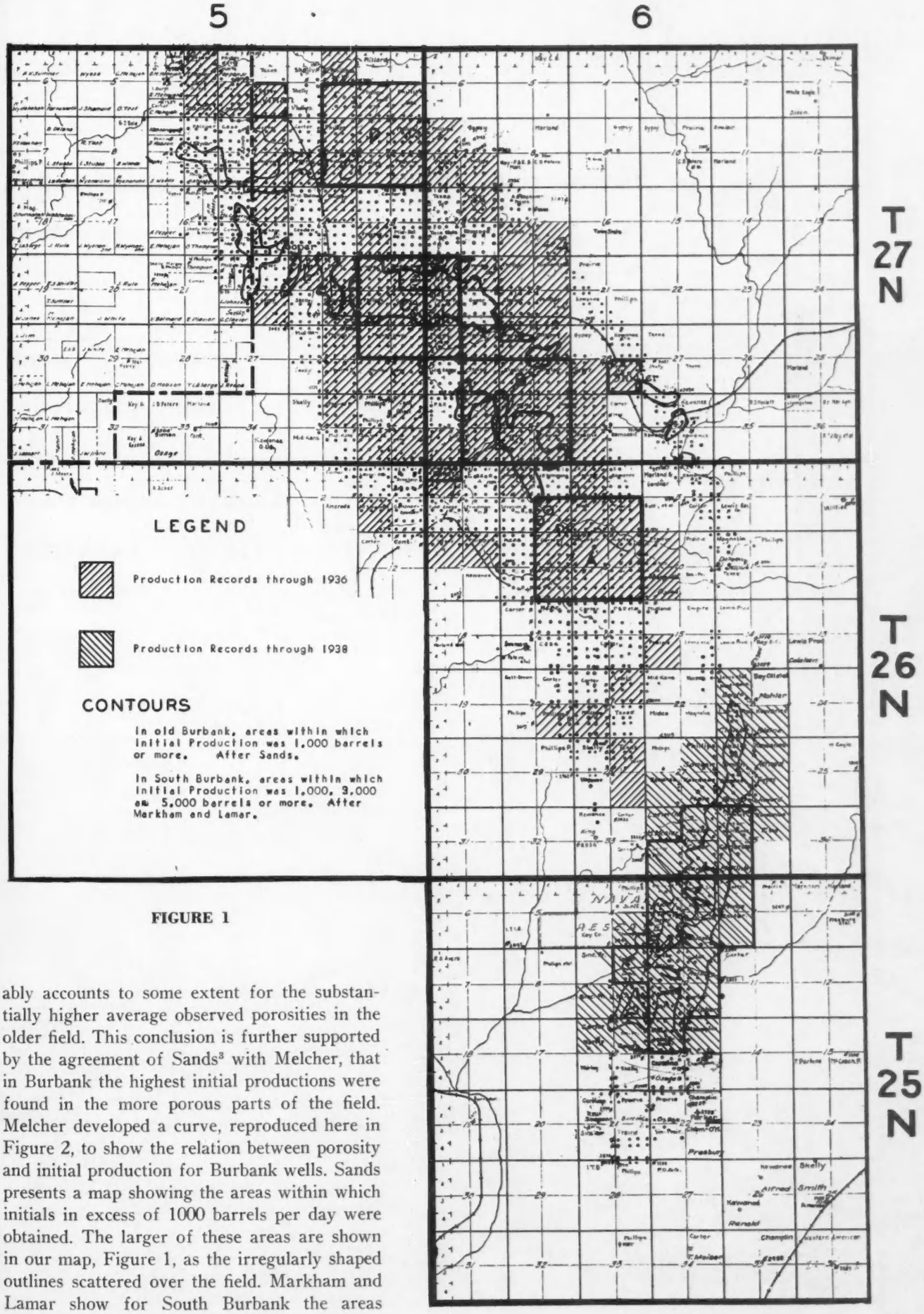
5
6
T 27 N
T 26 N
T 25 N
LEGEND
Production Records through 1936
Production Records through 1938
CONTOURS
In old Burbank, areas within which initial Production was 1,000 barrels or more. After Sands.
In South Burbank, areas within which initial Production was 1,000, 3,000 and 5,000 barrels or more. After Markham and Lamar.

FIGURE 1

ably accounts to some extent for the substantially higher average observed porosities in the older field. This conclusion is further supported by the agreement of Sands[3] with Melcher, that in Burbank the highest initial productions were found in the more porous parts of the field. Melcher developed a curve, reproduced here in Figure 2, to show the relation between porosity and initial production for Burbank wells. Sands presents a map showing the areas within which initials in excess of 1000 barrels per day were obtained. The larger of these areas are shown in our map, Figure 1, as the irregularly shaped outlines scattered over the field. Markham and Lamar show for South Burbank the areas

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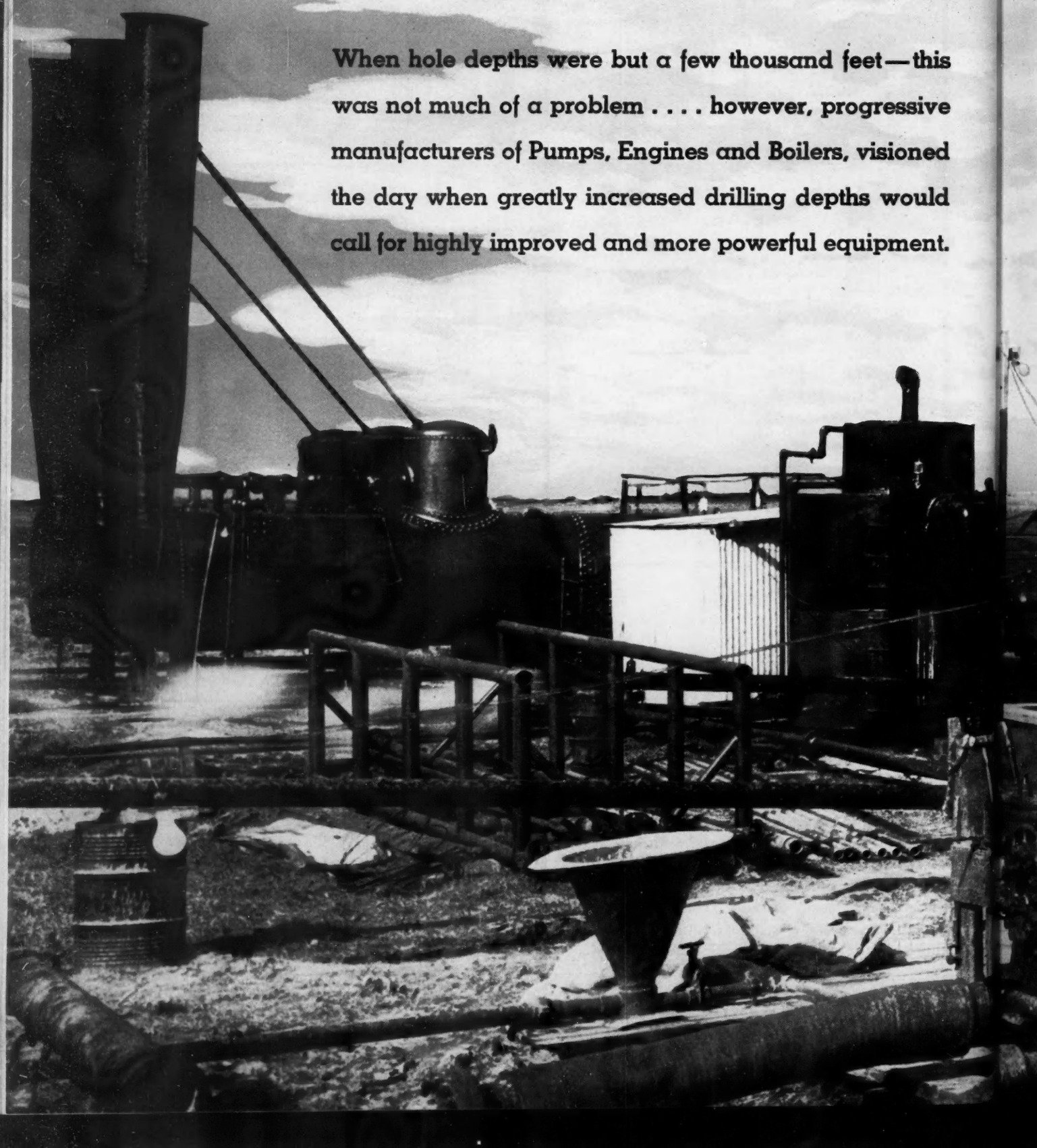

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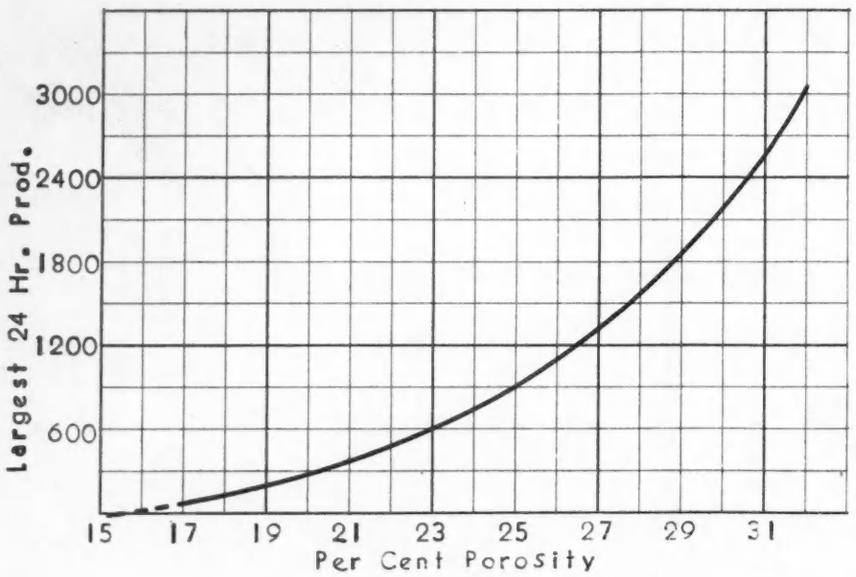

FIGURE 2

Relation between porosity and initial 24-hour production (after Melcher).

within which initials in excess of 1000, 2000, 3000, 4000 and 5000 barrels per day were obtained. So great is the continuity of these areas that definite contours can be drawn defining them. Three of these contours are reproduced in Figure 1, the 1000, 3000 and 5000-barrel lines. These writers account for this continuity, in contrast to the scattered and irregular occurrence of large wells in old Burbank, by stating that the continuity of formation ridges in the sand is much more pronounced in South Burbank than in Burbank. Thus, in the old field, large wells were of very erratic occurrence, though two of the best informed writers on that field relate high initial to high porosity. Notwithstanding this, in the new field higher initials over larger areas are found in a sand of much lower reported porosity. This writer believes that the differences in reported porosity in the two fields can be accounted for by the different methods of sampling; and that the greater continuity of high initials in South Burbank can as well be accounted for by the restriction of the early open-flow of every well drilled in that field—as opposed to the diametrically opposite handling of every well drilled in old Burbank—as by the predication of continuous formation ridges. At least this consideration should have some weight.

Fundamental Similarity

Another indication of the fundamental similarity between Burbank and South Burbank is found from an examination of Table 3. This shows the decline in the average daily runs from South Burbank and the average daily allocation under the proration scheme adopted. It will be noted that these move together, raising the presumption that the average production per well could be materially increased at any time, and that this increase could be maintained for an indefinite period were the daily allocation for the field increased. The decline in total production and in per well production appears to be the result of proration rather than the inability of the wells to produce at a higher rate. The estimated productive portions of the unit area in South Burbank have already produced 6750 barrels per acre, and the recovery from the estimated productive portions of all the shaded tracts is 5030 barrels per acre. This has been accomplished with a pressure drop of but about 50 percent. It would appear, therefore, that had no restrictions been

TABLE 3

Comparison between daily allocation and daily pipe line runs at South Burbank

Date		Daily Allocation	Average Daily Runs
1934	December	10,000	9,471
1935	June	11,170	11,117
	December	10,929	11,223
1936	June	13,527	14,673
	December	15,191	15,240
1937	June	15,200	15,218
	December	13,217	13,183
1938	June	9,763	9,638
	December	.....	.....

From Okla. Corp. Comm. Bull.

applied to this field, the ultimate recoveries would closely approximate those indicated in Table 1 for old Burbank areas; and that the actual ultimates, as a result of these restrictions, will be greater than in the older field. This point is developed, not for the purpose of using these estimates to support my conclusions as to proration, but solely to establish the great degree of similarity between the two fields, and so to increase the validity of such conclusions as may later be drawn. After weighing carefully all the evidence presented by the ablest writers on both areas, this writer is of the opinion that these two fields are so nearly identical that their use in a comparison serves to eliminate from the problem all those elements of difference which would have their origin in reservoir conditions.

Basis of Comparison

Having thus sought to [illegible] the validity of the comp[illegible]riso[illegible] be made, a means of m[illegible]ing must be devised which will [illegible]m[illegible]nate the accidental differences [illegible]n the price levels prevailing in t[illegible] two periods; and which will properly evaluate the rates at which income was obtained from the field and at which money was poured into it to create this productivity. In order to accomplish the first of these objects, money units have been avoided. Instead, production units — barrels — and productive units — wells — have been used. There is no difference in cost between a completed well in old Burbank and a completed well in South Burbank, as of even date, though there may be substantial differences in the actual cost of the wells that have been drilled in those areas. Now as soon as money is invested in a plant an interest charge begins, and will continue to run as long as that plant unit is kept in existence. It also compounds. The rate chosen is not material so long as the same rate is used throughout the problem. Compound interest at 8 percent has been used herein. Similarly, as soon as production is obtained, benefits have been realized, and the

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possession of these benefits gives rise to an added value, measured also by compound interest at the same rate as that used for the investment units.

At the end of each year, the accumulated production units with accrued compound interest from the date at which they were realized will be some particular figure which will be a function of a single variable only, the rate at which these production units were realized. At corresponding times the accumulated total investment in productive units, with accrued compound interest at the same rate, will amount to some other particular figure which will be a function of another single variable, the rate at which these investment units were installed: that is the rate at which investment funds were required.

The ratio of the one to the other of these figures will therefore provide an index of the relative value, at any time, of production benefits to investment burden, and this index will be a function *only* of the rates at which these two variables have entered into the problem. This index or ratio is designated herein as the "Production - Investment Ratio." For a single field alone, it has no meaning. But it provides an absolute basis for comparison of the relative merits of the development and production methods used in two or more fields, and this comparison increases in validity the more nearly identical are the fields being compared.

"Production-Investment Ratio"

Figure 3 presents graphs of this "production-investment ratio" for the old Burbank field and for the South Burbank field. It is at once apparent that even that part of South Burbank which lies outside the unitized area is in a much better position than was the old field at the same age. All three of the curves given for South Burbank are still rising sharply. That for the unitized area will probably tend to flatten out at about 120 to 130; that for the field as a whole, probably about 10 or 15 points lower. The advantages of the operating methods used in South Burbank over those used in Burbank are therefore clearly indicated—and no theories as to future recoveries have been permitted to enter the problem. Proration as applied in South Burbank, joined with a careful control of development, has yielded advantageous result.

This question may be raised: It may be asked whether the operators in old Burbank operations did not as a matter of fact realize more from unrestricted operation of the field than they would have under a program such as is now being followed in South Burbank. This is really beside the point, because the Burbank operators followed the only course open to them at that time. Such a program as that in South Burbank would have been regarded as the rankest kind of heresy in the early 1920s. The wisdom or folly of having acted as they did does not appear pertinent. But let us investigate it a bit anyway. From the point of view of gross income alone, there can be no question that more was realized than would have been under a 30 to 50-barrel daily allowable. But on a final net basis, the picture is not so attractive. Table 4 gives the bonus cost per barrel for the entire area and for the four blocks "A," "B," "C," and "D". In the Block "C" area this amounted to 60 cents per barrel. Lifting costs in South Burbank have ranged from 8 to 12 or 15 cents per barrel, and can probably be held close to that range for several years to come. Except during the first few months of flush production on each tract, the lifting costs in old Burbank were never much below 8 cents per barrel; they have been above 40 cents for several years, and are now close to 55 cents per barrel. The high bonuses paid in Burbank were the result of the rapid returns possible. South Burbank bonuses have not been nearly as high. In Markham and Lamar state the highest price paid for a quarter section was $342,000, the lowest $50. The average bonus cost per tract will probably be well below $100,000, as compared to an average of $305,000 for all of old Burbank. So even though the price level during most of the period of flush production in Burbank was around the $2.00 level, the average over-all net return from the field will not be so very much greater than that for South Burbank, all of the production from which, to date, has been

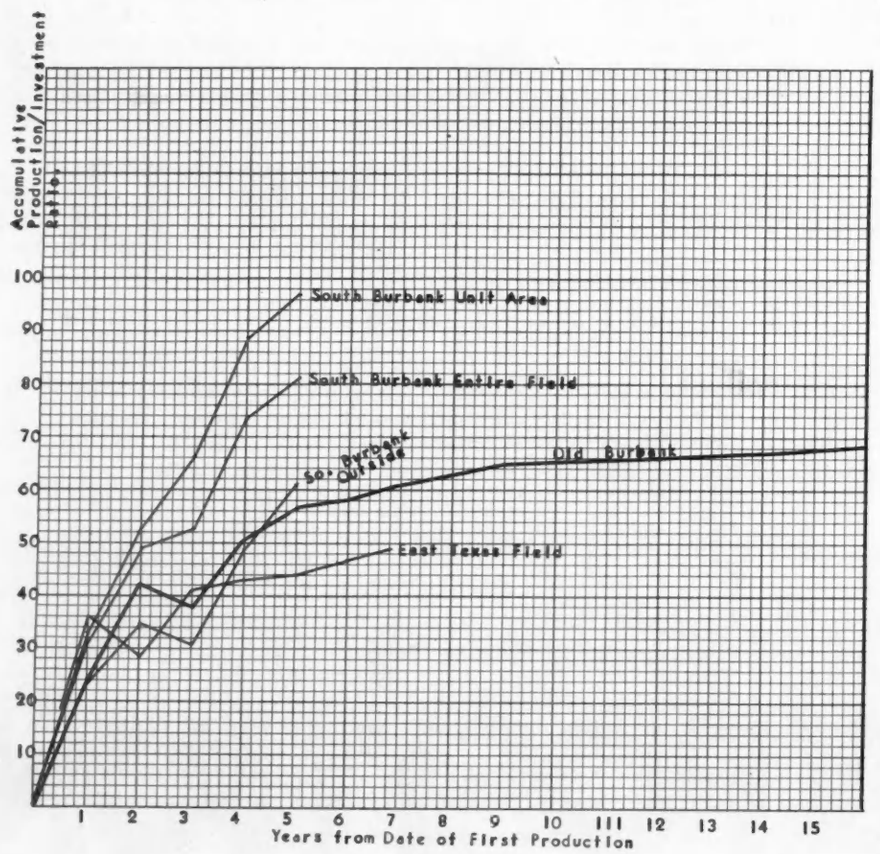

FIGURE 3

Chart contrasting results of two types of proration with the results of unrestricted operation. Note that the East Texas curve has already flattened out at a point well below that for old Burbank, notwithstanding severe restrictions in well allowables. This is due to lack of adequate control of development. Contrast with South Burbank curves which are still climbing sharply in the sixth year though already far above the old Burbank curve.

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TABLE 5

Recent abandonment rate in Old Burbank

Year	No. of Wells Abd.	Gross Production
1934	28	3,341,000
1935	28	3,057,000
1936	15	2,829,000
1937	11	3,057,000

From Rorschack and Dahlgren[6], A.I.M.E. proceedings.

produced at around the $1.00 price level.

The very large daily totals in early Burbank production made necessary the investment of millions of dollars in storage tank farms. This has not been necessary in South Burbank. The very large gas volumes produced with this ocean of high gravity oil caused other millions to flow into very large gasoline plant facilities, which soon became excessive. Much of this has since been reclaimed. In South Burbank one gasoline plant of moderate size easily treats all the gas production and also serves as a repressuring station. If the cost and interest load of these unnecessary facilities, and the value of the gas wasted to the air, and the light fractions of the oil lost through evaporation from storage tanks be added to the total cost of the pipe line oil delivered out of Burbank, the advantages of wide open operation of that field tend to shrink still more. No attempt will be made here to evaluate these elements, because, after all, they are really not essential to our problem, and are only of correlative interest.

East Texas Situation

There is another important prorated area in the country which has been very much in the public nostrils for several years, and to the control of which an enormous amount of effort and money has been devoted. That area is East Texas. There the development control machinery has all but completely broken down, in practice if not in theory, with the result that there proration has been applied without any effective control on the number of productive units, that is, wells. Some of the grievous effects of the system of proration there in effect have been commented upon at length by the writer[4] and others.[5] By virtue of almost equal well allowables and a very large total oil reserve, almost any number of wells will pay themselves out. Consequently, an enormous overdevelopment has taken place, which has forced itself, like a disease, even upon those who sought to avoid excessive drilling on their leases. The effect of this excessive investment load is clearly shown by the shape and location of the East Texas graph in Figure 3. This has flattened out in the third year of operation at a point substantially below that for Burbank, a wholly unrestricted field. Notwithstanding the fact that every condition in East Texas should have tended to cause this field, under proper development and production control, to make a very much better showing than even the unitized area in South Burbank, solely as a result of the breakdown of Rule 37 and the adoption of nearly equal well allowables, East Texas proration has been a costly enterprise.

Pogue Quoted

According to Pogue[8] "If proration, in its further evolution moves progressively in the direction of conserving reservoir pressure, it will be fulfilling its most important object." In this respect certainly, East Texas proration has been eminently successful. It has also served to prevent the complete collapse of the crude price structure, not only in that field but in every other field in the Mid-Continent. This cannot be proved, but appears too obvious to require proof. From the standpoint of the present study, however, it has been a failure, in that it has encouraged an excessive investment in comparison with the returns which it permitted.

There is still time to remedy this situation to some extent. Reclaiming the investment in about half of the wells, would reduce by about one third the denominator of the production-investment ratio, causing that curve to rise. But it is too late to accomplish very much in this direction, because of the operation of compound interest, and the impossibility of reclaiming any investment at 100.

Conclusion

In conclusion, the writer submits that he has established the factual nature of the evidence adduced, and has presented this evidence in such a way as to show, for the three areas discussed, the relative merits of the three methods of property management therein applied, undistorted by theories as to what might have happened had something or other different been the case. He hopes that thereby he has met the conditions set by the editors of THE OIL WEEKLY for "facts, not theories" bearing upon this much discussed subject. One thing stands out very clearly. Effective development control must proceed hand in hand with proration for proration to be a paying proposition. The two are as inseparable as the two wheels of a bicycle, and attempts to apply proration independently of adequate development control yields results comparable with attempts to ride a bicycle with one wheel missing.

TABLE 4

Cost of Oil in Place—Bonus Cost

Area	Total Bonus Cost	Estimated Ultimate Barrels	Cost per 160-acres	Cost per Barrel	Additional Cost per Well Drilled
Old Burbank	(7)				
Block "A"	$1,007,600	11,109,980	$111,955	$.09069	$7.933
Block "B"	3,245,300	11,858,604	360,589	.27367	22.537
Block "C"	11,003,000	18,340,823	1,222,555	.59991	82.112
Block "D"	3,210,000	15,917,746	356,666	.20166	24.692
56 other tracts	37,375,940	123,283,361	406,260	.30317	30.412
Total field	$58,558,140	228,318,000*	$304,980*	.25648	$27.792*

* Through 1934, production had been obtained from 192 tracts on which a total of 2,107 wells were drilled. Of these 2,066 were producers and 41 dry holes. In addition to these dry holes on producing tracts, 20 other limiting dry holes were drilled on tracts which were then abandoned. The estimate of the ultimate for the field is based on a total recovery through 1936 of 190,718,000 barrels, as given by Rorschack and Dahlgren.

(7) Bonus costs from Oil & Gas Journal, March 24, 1927. Complete for field except for a few low cost edge properties.

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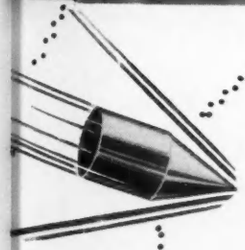

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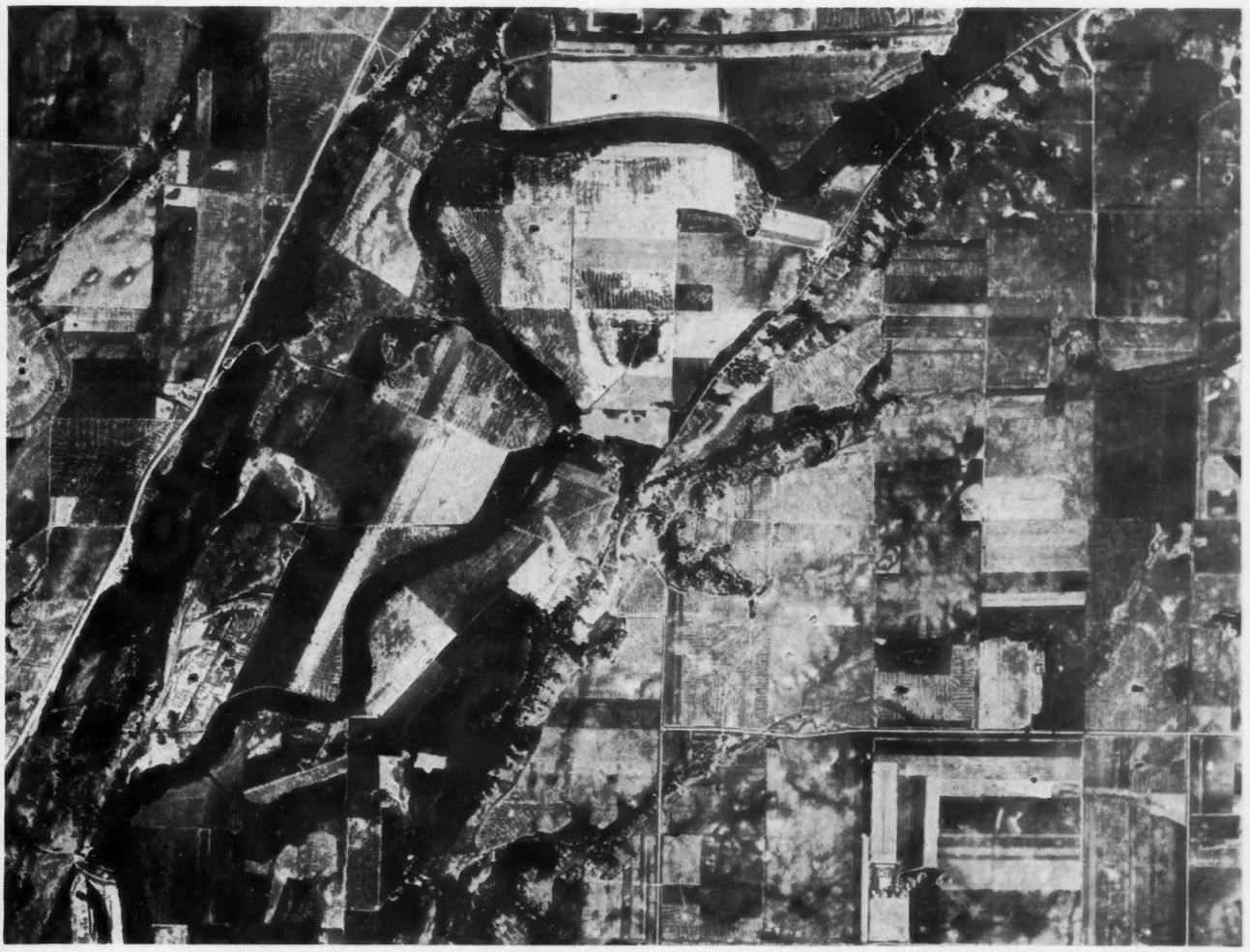
Recent Advances Add Greatly To Aerial Photography Value

By FRANK B. TAYLOR, Staff Writer

In sparsely settled or developed regions the aerial view, as on this page, affords the opportunity of making a careful study of features and conditions difficult to approach on foot or by car. Changes in predominate tree or ground growth, soil variation, stream courses and other criteria are tools used in the interpretation of the geology.

GREAT strides made in the past five years have earned for the science of aerial photography a distinct place in the oil industry. The art of mapping and interpretation at present occupies an unique and important position. It is now an ally of the petroleum geologist and engineer rather than an experimental sideline presenting possibilities for development.

Prior to five years ago the ground work was being



Striking contrasts are apparent in this scene of a cultivated sector. Topographic conditions that can be traced on the flat reproduction become highly accentuated with the use of the stereoscope, and with it the geology of the area can be detailed. The illustration contains about six square miles.

laid; the pioneering was underway. Cameras, ships and methods were at hand, but that was about all. Some fundamentals that are the basis of present developments were theoretically applied. Some surveys of various natures were made and found satisfactory but aside from being indicative of the possibilities presented by aerial photography, they aided but little in the immediate advancement of the art.

Since that time, building upon early knowledge and investigation, experiment and theory slowly gave way to modern methods and practical applications. Development was rapid. The three basic requisites; cameras, ships and methods, were correlated to satisfy the specific needs of the oil industry. Problems that were at first without solution have been solved, so that now instead of being limited as to scope, the science of aerial photography is reaching for new fields to conquer.

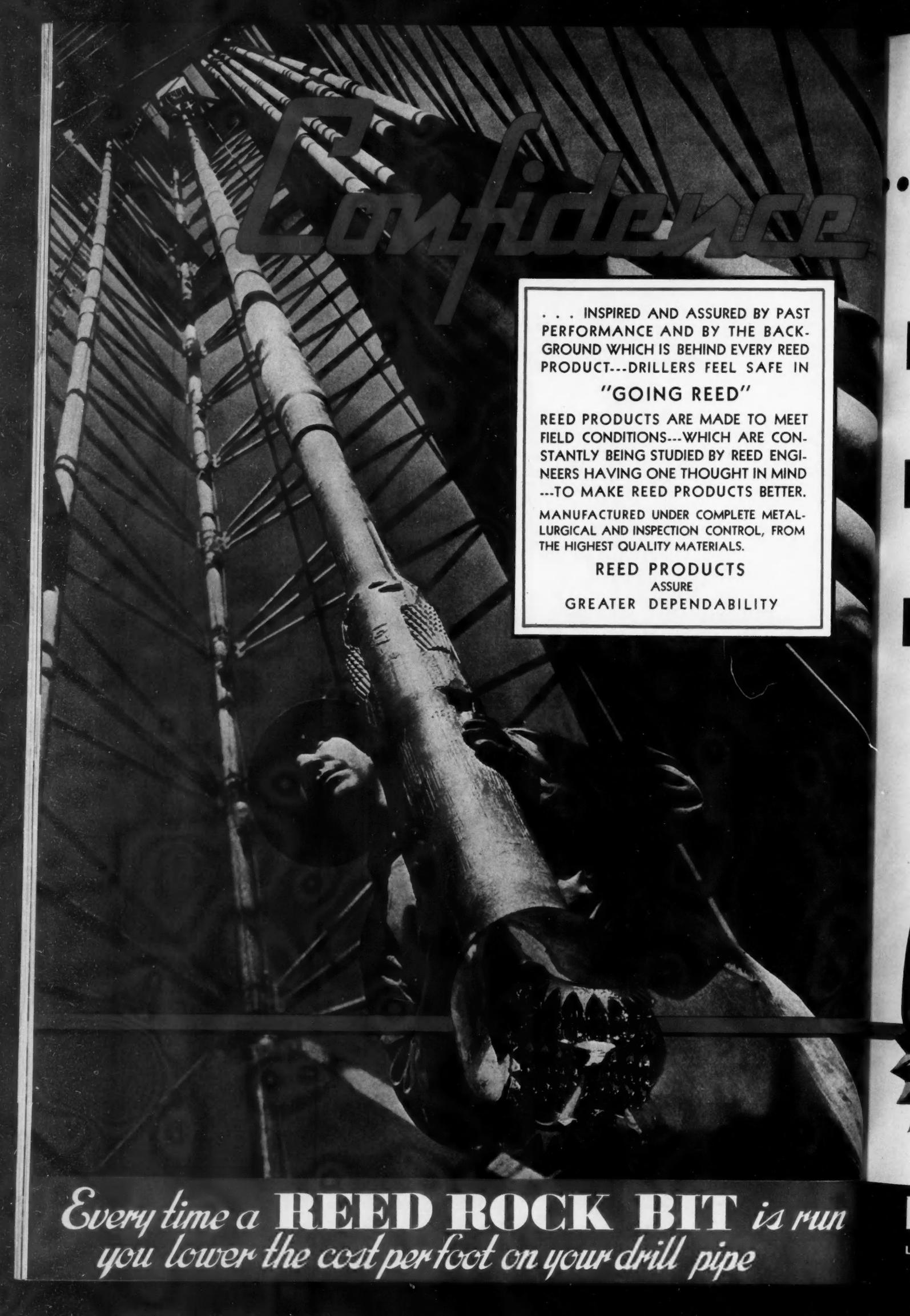
Routine Mapping

General mapping may be classified under three heads: strip, spot and mosaic. Strip mapping is especially desirable to route a pipe line from point to point. The general lay of the line is proposed and the route is mapped by ship. For this purpose the photography is limited to the length of the line and follows its turns and curvatures.

As near as possible the plane follows the center of the possible right of way, but exposures are obtained to a distance of one and one-half miles each side of the center. Through this method a survey of a prospective right of way 200 miles long would return an aerial map of 600 square miles. The individual pictures are then assembled to form a strip-mosaic of the area surveyed. By the use of a fine thread the engineer is enabled to indicate the exact routing of the line from point to point. Variations from a direct route can be made, indicated by displacement of the thread, to avoid obstacles such as cemeteries, structures, dangerous river crossings and other hazards. Experience has shown that deviations from the original line of routing will very seldom be more than two percent.

Spot mapping is a survey confined to a restricted area, usually for the purpose of definitely locating a pipe line station, terminal, plant or other structure. Only a few exposures are customarily required. In aerial spot mapping, the usual flight altitude of the ship making the exposures may be considerably lowered to obtain greater ground detail than is required of surveys covering greater areas.

Mosaic mapping, the most important of the three classifications to the petroleum industry, concerns mapping of undefined areas or general territorial surveys. It is usually for the purpose of obtaining structural information of a specific sector but may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be applied on a larger scale to acquire topographic and geologic knowledge of a trend. Prospective geologic features are general assignments, while surveys of proven and producing areas are made to aid in the definition of structural limits and possible extensions to the proven areas. Fault lines are a common subject for the aerial photographer. General topographical surveys are utilized to advantage

Geologic interpretation by means of the stereocomparagraph, an improved stereoscope, a more simple form of which is seen in the right foreground. By aid of this instrument and by placing two views of the same object made by exposures from slightly different angles beneath the lenses, the third dimension, or depth, is perceived. Note the drawn contours.

in wildcat areas to locate the most practical route for the transfer of materials.

Mapping Processes

Cameras used for aerial photography are of special construction although they follow the principles applied in the ordinary view camera. The instrument is mounted in the floor of the plane. In addition to the usual adjustment in aperture and focal length, the aerial camera incorporates spirit levels and adjustments to place the instrument in a vertical position in relation to the earth and the line of the exposure. This is necessary to compensate for any tilt of the plane. Exposures may be made from practically any altitude although it is general to fly at a height of between 3 and 4 miles. This affords a scale of 1-to-20,000 on the finished photograph; a compromise that is reliable and economic. For greater detail the scale is reduced by holding the plane at a lower altitude. This is about the only reason for varying from standard practice.

The area subject to the survey is traversed in strip segments, the exposures being made along the line of flight. In this manner it is possible to photograph a single township in a time elapse of about 10 minutes from exposure of the first picture to the last exposure. This involves the taking of 18 individual pictures, but the time element given does not consider the distance from a flight base to the survey location or the time required to gain necessary altitude.

To assure continuity of exposures and to allow for minor discrepancies in the line of flight, more than sufficient exposures are made. This allows the finished pictures to overlay in each direction, and aids in comparison of the positive prints. Overlap is not constant but is in the order of approximately 60 percent along the line of flight and 30 percent laterally. Each single exposure includes between 5 and 6 square miles of territory.

Various color filters are used as an aid to the aerial photographers' art. They add to color contrast of the terrain, making comparisons more accurate. Color identity decreases markedly with distance, a fact readily apparent when looking at far-distant objects, and the color filter tends to compensate for this reaction. In addition to its use as an agent to bring out detail and to strengthen color contrast, the use of a filter aids in effectively penetrating mist, dust or haze between the camera and the earth. The color filter is at times confused with color photography although there is no actual relationship. Negatives and emulsions for any purpose are not yet perfect, and have a tendency to record certain light rays more readily than others. This was quite noticeable in early films which recorded blue as being almost white, and red as being quite dark. Although this effect has been largely nullified by improvements in emulsions within the past few years which make the sensitivity of the negative more nearly uniform to all light rays, the use of the filter adds to contrast qualities of the finished print.

Processing of Negative and Print

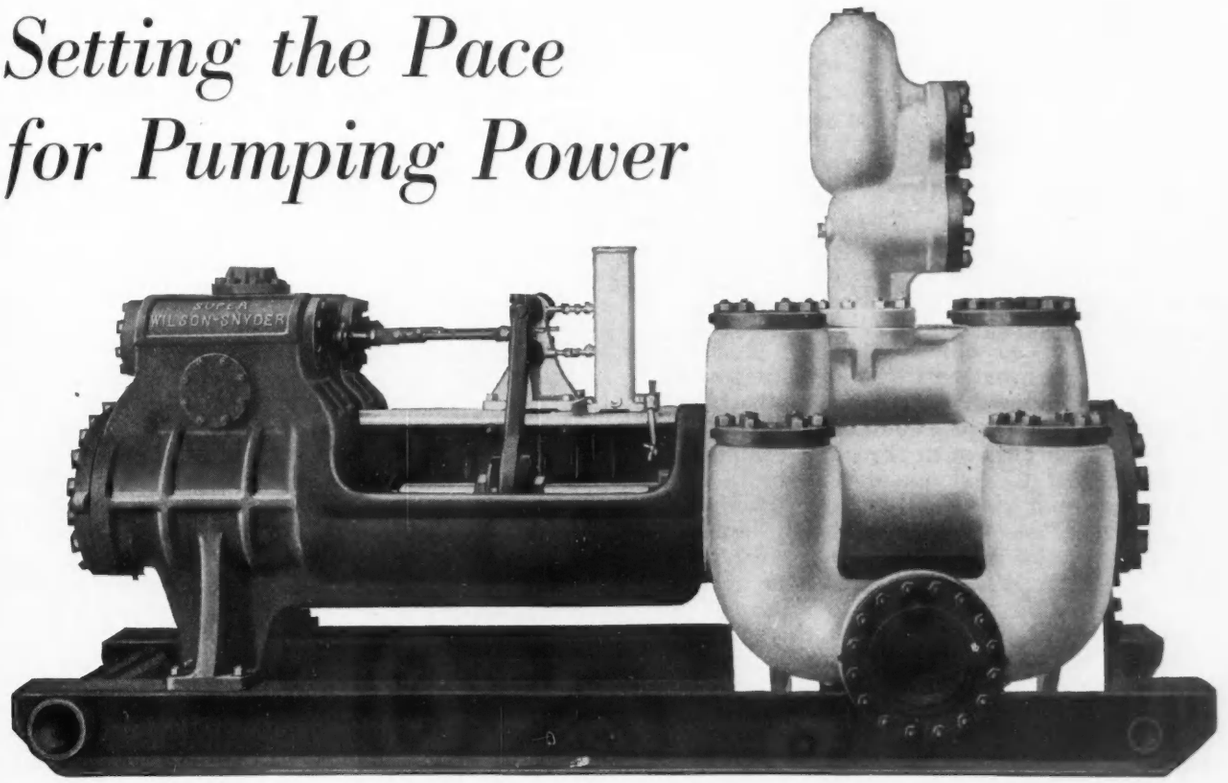
The same basic processes are applied to aerial photography that are used in ordinary photographic work. The exposed negative, of 100 individual pictures, is wound on a helical form with the emulsion or dull side away from the helix material. This unit is then placed in the developer and at proper development is removed and rinsed thoroughly. It is then placed in another solution for fixation of the pictures, rinsed again and dried.

Prints are made in the conventional manner developed after exposure to the negative, rinsed, fixed to insure against fading and discoloration, and dried. The separate prints are then assembled into the master mosaic which is a composition showing the entire subject of the survey. This combination is then photographed to obtain a single, uncut and complete, picture of the subject.

One important variation in the printing process that is a recent development is the use of a special paper for the positive prints. This base is of cellulose impregnated paper with high moisture-resistant characteristics. Its advantage is in a minimized shrinkage factor, and it is allowed in the solutions only long enough to secure the desired quality in reproduction. Ordinary paper coated with regular emulsion has a tendency to shrink in the direction of the grain, producing a distortion of scale factors. Although this error may not be noticeable to the eye the accuracy demanded of modern aerial photography required that it be eliminated. By this recent advancement shrinkage allowance is obviated.

The greatest advancement in the science of aerial photography and subsequent interpretation is in affording an appearance of depth to aid in the examination of the finished picture. This is termed parallax displacement and adds the third dimension to the usual height and breadth of the customary reproduc-

Setting the Pace for Pumping Power



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tion. This illusion is made possible through a combination of applied factors, and is highly important.

Ordinary vision embraces all three of the dimensions in everyday life; buildings, streets and open country scenes have breadth, height and depth or distance from a point in the foreground to a point farther away. Ordinary photographs suffer the loss of depth. The reason a person can perceive depth is due to the fact that he does not see exactly the same thing with each eye. The eyes being separated by a matter of about 3½ inches, each eye visualizes an object or scene from a slightly different angle.

This produces a disparity or dissimilarity of the exact placement of the objects viewed. This effect is readily apparent when nearby objects are viewed first with one eye closed then with the other closed. The differences, although slight, are immediately noted. With both eyes open the mind compensates for the differences of vision and produces a single picture-impression having depth as well as height and breadth. Medical cases in which totally blind persons were given the sight of one eye have proven the theory a fact. When such was done the individual had to become accustomed to a third dimension, as it could not be preceived by the single eye. In persons suffering the loss of one eye past association with three dimensions and the knowledge of depth materially aid in preserving a third dimension illusion.

In an ordinary flat picture each eye sees exactly the same objects and detail of the picture in the same place and in exactly the same relationship to nearby objects. Therefore, there is no opportunity for the eyes to compensate for differences, hence the picture is totally without depth.

The problem of obtaining the depth function in photographic reproductions then resolves itself into a simple demand: Force each eye, alone, to view pictures of the same scene taken from slightly different positions. Each picture would then be of the same specific scene, but each also would be slightly different from each other having been taken from a slightly different angle. In this manner the two pictures correspond to the two visions afforded by the two eyes when viewing normal sights. By viewing these two slightly different pictures through lenses placed before the eyes, the right eye sees objects in one position and the left eye sees the same objects in a slightly different position, allowing the eyes to compensate and producing depth or the third dimension.

The parlor stereoscope used 30 years ago obtained this object by viewing two slightly different pictures through dual lenses. During the World War three dimensional pictures were used to some extent in locating camouflaged field pieces. Aerial exposure would be made from two different positions above the area under suspicion. When the two pictures were placed nearly together and viewed through stereoscopic lenses, a short length of barrel of an artillery piece protruding above camouflage would apparently be thrust high into the air.

Another applicable method of obtaining three dimensional vision by the use of pictures, is to print the two slightly dissimilar scenes on the same paper but in two colors. By looking through lenses, each colored to match one of the colors used on the print, the illusion of depth is obtained. This results from the blanking out of one color print to one eye and the other color print to the other eye.

By either method, hills, valleys, structures and other topographic variations appear in their relative heights. By reversing such a scene so that the bottom of the two pictures are at the top, the uninitiated is startled by the result. The reversal changes the relative position of the corresponding objects of the two pictures and this reverses the illusion. The hills that jutted up from deep valleys suddenly recede to become the valleys. The valleys rise to become the hills . . . with streams meandering along the highest ridges.

In making exposures for three dimensional interpretation from a plane, it would be useless to make the pictures from points separated only a little distance. From an altitude of three miles the surface of the earth appears practically flat to the observer because the angle of vision afforded by the eyes is extremely small. To overcome this the exposures are made nearly a mile apart. This greatly increases the displacement of the objects viewed and exaggerates the height of every object when viewed through a stereoscope, making height relationships readily apparent.

The perspective, or three dimentional function, came into practical use in general aerial photography about five years ago, but has been developed to a high degree in the intervening years. Today, it is the basis for interpretation of topographic and geologic features.

Outcrops when seen through a stereoscope assume their correct elevation relative to bluffs and hills, and can be traced to contour a sector. Different outcrops assume their individual identities and can be correlated. Through the function of depth, the interpretation can include a gauge of the displacement of similar geologic beds. Vertical separation of strata is determinable, allowing concise geologic information.

Horizontal displacement of strata, denoting a fault line, can be computed as well as vertical displacement. Variations in soils are made apparent with the aid of filters and can be traced with accuracy. Complex faulted conditions may be reduced to workable detail.

Structural contours are made by placing paper having a high degree of transparency over the pictures and marking beds with pencils colored to indicate their individuality. Degree of dip is calculated through use of the perspective afforded by the three dimensional illusion. Geologic and topographic features not apparent on the ground may be defined by a study of the aerial pictures. In terrain difficult to cover by foot or car, examination of aerial pictures points out the most advisable approach to areas under study and at the same time details the geologic features to be found.

Acreage surveys can be made of any area and the results are highly accurate. This function is desirable either in leasing of prospective geologic features or in buying right-of-way for a pipe line.

Aerial Observation

Aerial observation is an important direct aid to a surface inspection. Inaccessible areas can easily be examined from the air. A geologist working a Webb County, Texas, prospect was handicapped by lack of roads through mesquite and decided to make use of a plane. In the hour and one-half in the air he worked out the structural detail, complication by a fault he was unable to trace on the ground, and in addition sighted two other structures. One of the latter has been drilled and is producing at this time.

In some cases the plane has been used to trace

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Contouring is done on a very thin sheet, highly transparent, that is placed directly over the prints. As is apparent in the illustration this sheet material does not hinder detailed examination of the picture . . . and complete contours and geologic interpretations are obtained by analysis of the photographs. The pictured contouring involved no surface work.
—Courtesy Louis Desjardins, Geologist, Aero Exploration Company.

contours of salt dome prospects by soil contrast. Changes from normal vegetation are an aid in such work. Stream patterns may be an additional aid. Contrast from one color of soil to another, that might not be apparent on the surface, is far more sharp from an altitude. Faults can be traced either through outcrops, or if these are eroded away the fault can often be traced by the grain material.

Pipe lines use planes to advantage in order to inspect a line for leaks or work underway. Oil leaking from a line shows a distinct dark spot from the air. A gas line leak kills or dwarfs vegetation where the gas breaks through the surface. This is noticeable from an altitude although the line walker may attribute the stunted growths to poor soil and not report the condition.

Looking to the Future

Although remarkable progress has been made during the past five years in the science of aerial photography, with the most important contribution being the use of perspective interpretation, new development and experiment is pointed to an even greater increase in the value and application of the art.

Recent improvements in emulsions used on the negative allow much faster exposures. Only about one-fourth the light is required for the exposure, allowing the photographer to decrease his aperture to secure greater detail. Further advancement along this line will allow the altitude to be increased so that more area can be covered by a single exposure.

Cameras are constantly being improved and it is indicated that pictures nine by nine inches are practical. With lenses of longer focal length greater precision will be had. It is confidently expected that with these latter improvements and through the use of faster emulsions higher flying equipment with constant speed propellers will be pressed into service.

The use of the stereoscope is being advanced and the instrument is constantly being improved as well as being simplified. The art of interpretation of the finished prints is undergoing rapid changes and improvements at this time and important announcements will be made in the near future.

At present the new developments in color photography are not adaptable to use in aerial work. The fundamentals of color necessitate expensive equipment, greater exposure time, extreme care in handling and highly involved processing. Actual colors would be an aid in the science but at present the method is not practical. Detail is admittedly lost through the use of color. Future experiment is necessary before the color methods can possibly be turned to advantage.

Some thought has been given the surveying of shallow coastal water from the air. A number of problems immediately present themselves which are not solved at this time. It is a fact that from a fair altitude the submerged geologic features are visible. It is entirely possible that development will perfect a means of photographing off-shore features to the advantage of the oil industry. Such would be desirable along the West and Gulf coastal regions.

Aerial photography has become a valuable instrument for the petroleum industry. Provided that improvements in the future are as significant as those in past recent years, this value will double in the next five.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Canadian Fields

Fifty percent reduction in Turner Valley charge for transportation recommended by commission.

A reduction of approximately 50 percent in the present charge for transporting crude from Turner Valley, Canada's major oil field, to Calgary, Alberta, refining and shipping center and legislation placing the pipeline division of Royalite Oil Company, Ltd., under the provincial public utilities act was recommended last week by J. J. Frawley, K. C., counsel for the McGillivray royal commission probing the west Canadian province's oil industry.

Following hearings that occupied the greater part of the past three months, the commission was hearing summary arguments on the pipeline phase of its inquiry. A brief adjournment is expected this week for study of testimony and evidence submitted and preparation of a recommendation on the fair price for transporting crude from the Turner Valley field. The commission has indicated it would resume its investigation, directing its attention to other branches of the industry, almost immediately.

Frawley, summarizing estimates on the life of Turner Valley given by United States and Canadian petroleum engineers that ranged from 3 to 27 years, asked the commission to accept 19 years as the probable life of the field. Taking this period for amortization of the Royalite company's investment in its pipeline properties, he asked the commission to recommend a rate of 7.9413 cents a barrel in place of the present charge of 15 cents set by the company. The lower figure, Frawley added, would give the company a 10 percent return on its investment.

In arriving at the company's investment in its pipeline system, the commission should not take into consideration a six-inch loop constructed at a cost of $175,000 and taken up in 1932, Frawley argued. The loop cost the company $102,000, after salvage was deducted. During the inquiry, accountants retained by Frawley refused to include this investment in the total cost of the pipeline properties, while accountants retained by the company did take it into consideration.

The commission counsel also asked that the valuation of the system be computed on the basis of its investment cost, rather than on the basis of present replacement cost less "observed depreciation." The latter method, Frawley said, had been taken by Edgar G. Hill, United States petroleum engineer who testified for the company.

Referring to testimony previously submitted showing that the company had realized substantial profits in the operation of its pipeline system in past years, H. G. Nolan, K. C., counsel for the Royalite company, told the commission that even if the company had received its original investment back 100 times in past profits, it was still entitled to a rate sufficient to pay back its original investment and yield a fair return on the investment.

This, Nolan declared, "was one of the few advantages arising from the placing of the company under control of a regulatory body." He quoted decisions of the United States Supreme Court to show that when a regulatory body sets a pipeline rate, past profits made by the company owning the property, when not under public control, should not be taken into consideration.

The Royalite counsel also read court rulings to back his contention that the rate should be set on the value of the pipeline system at the time the rate was set, in line with the replacement theory advanced by Hill, rather than on the original cost. The $1,700,000 valuation set by Hill had not been disputed, and there was no other testimony before the commission on the present day value of the system, he pointed out.

While accepting a figure of 15½ years for the estimated life of the field set by Stanley J. Davis, Calgary geologist and production engineer, Nolan contented that the commission should set a pipeline rate sufficiently high to return the investment in 10 years. He referred to testimony by Alexander Deussen, Texas oil expert retained by Royalite, to support his stand.

Frawley agreed with Nolan that the commission could not properly take into account admittedly large profits made by the company before regulation in establishing a rate base. Justice A. A. McGillivray, commission chairman, pointed out that the profits were made when the pipeline operations of the company were not controlled by a regulatory body, but in the future a rate would be set to allow for amortization and a return on investment.

In answering Frawley's suggestion that the pipeline operations be placed under control of the public utilities board, Nolan, said this was "hardly expropriation, but very close to it." When reminded by Commissioner L. R. Lipsett that the company would be permitted to earn a return on its investment as well as have the investment amortized over a period of years, and that if it continued to transport crude beyond the amortization period, it would realize an additional profit, Nolan said: "It is only the fact that legal title remains with us that would keep such action from being expropriation."

As an alternative to bringing the pipeline department of the Royalite company under control of the public utilities act, Frawley suggested that the commission might advise the legislature of the advisability of enacting legislation to make law the commission's recommendations.

Richberg, special emissary, reports progress in Mexico

Hope for amicable settlement of the Mexican expropriation wrangle grew late last week as Donald Richberg, special representative of the dispossesed American and British oil companies reported from Mexico City that "further progress" had been made in a conference with President Lazaro Cardenas.

Richberg has been meeting with Mexican government officials, among them Francisco Madjera, ambassador to the United States, during the past week, and further conferences are scheduled. The method of approach to the problem remained undisclosed. Mexican authorities have stated plainly that there will be no return of the properties, although well informed sources have reported that they are seriously considering long term contracts that would allow the companies to operate the properties for the government in lieu of cash compensation.

Meanwhile, the U. S. Congress again refused to act in the situation (see story, page 52).

MEN IN THE INDUSTRY'S NEWS

GEORGE S. HEYSER was re-elected to the presidency of General Crude Oil Company at the annual stockholders meeting on March 8 at Houston. All other officers and directors were also re-elected; Thomas W. Pew retaining the vice presidency, and J. T. Trevitt the office of secreary-treasurer.

E. W. MUDGE, JR., vice president of Mudge Oil Company, completed arrangements in Dallas the past week for the removal of the company's general office from Pittsburgh, Pa., to the Gulf States building in the former city. Principal properties of the company are in North and East Texas and in Southern Oklahoma.

H. K. LIVINGSTON, Shell Petroleum Corporation research fellow at Texas University, addressed the March 7 meeting of the Gulf Coast chapter, American Institute of Mining and Metallurgical Engineers, upon "Capillary Phenomena in Petroleum Production." The meeting was in Houston.

J. W. SELBY, chief scout for Shell Petroleum Corporation, returned last week to Houston from Corpus Christi, where he attended the wedding of another Shell scout: Matthew Roberts.

WILLIAM G. JOHNSTON, Oklahoma City operator, visited in Houston last week and bought a saddle horse from those exhibited at the Stock Show.

JOHN H. TUCKER, production superintendent of Gulf Oil Corporation, with headquarters in Houston, celebrated his 35th anniversary of service with the organization Wednesday, April 8.

CARL F. BARNHART, geologist for Amerada Petroleum Corporation, was elected president of the New Mexico Geological Society at the annual meeting held at Hobbs. R. L. Voss, Gulf Oil Corporation, and John Kelly of the New Mexico proration staff, were chosen vice president and secretary-treasurer, respectively. All are stationed at Hobbs.

THOMAS M. COLLINS, an employe of Gulf Oil Corporation and its predecessors for 35 years, has been retired. He was honored by co-workers in the Breckenridge, Texas, district with a banquet at the latter city March 6.

J. L. (JACK) McMAHON, former manager of the West Texas-New Mexico producing division of The Texas Company, was the honor guest at a banquet arranged by employes of the division at Wichita Falls March 5. McMahon was granted a leave of absence on August 1, 1938, because of failing health, and has since elected not to resume active duties with the company. He was succeeded by H. S. Cole, Jr., as manager of the division office, which is located at Fort Worth.

FRANK BROOKS, geologist with Gulf Oil Corporation, has been transferred to the eastern division headquarters at Indianapolis. Brooks has been at Wichita as a member of the Kansas staff of the company.

KENNETH B. NOWELS has resigned from Forest Oil Corporation to enter into private consulting practice, with headquarters in Abilene, Texas. For the past 3½ years Nowels has served as chief engineer and geologist for Forest Development Corporation, a subsidiary organization. Working from its Abilene

KENNETH B. NOWELS

office he has supervised development and exploration work for the company throughout North and West Central Texas. From 1930 to 1935 Nowels was chief engineer of the parent company, for which he conducted extensive water flooding projects and research work pertaining thereto, and was instrumental in establishment of water flooding in the Mid-Continent area. For the 7 years preceeding his connection with the Forest interests, Nowels was petroleum engineer with the Bureau of Mines. Nowels believes that the opportunities for water-flooding and shallow development projects in Texas are quite numerous.

FERRIS HEFFINGTON has been placed in charge of Magnolia Petroleum Company's new land and lease office in the American National Bank building, St. Joseph, Missouri. The office, the second to be established in Missouri by a major company, will be Magnolia's headquarters in the state. Heffington will be assisted by Ed Boase, who has been moved from northeast Texas.

LEE BUTLER, Dallas, Texas, operator recently active in Illinois, was in Evansville last week looking over activity in the tri-state area of Indiana, Illinois and Kentucky.

W. G. TURBEVILLE, of Longhorn Oil Company, left Evansville headquarters of the firm for a short business trip to San Antonio, Texas, last week.

L. MOSLEY MOFFITT, president of the Louisiana-Arkansas division, Mid-Continent Oil and Gas Association, was named chairman March 8 of the Ark-La-Tex chapter of the American Petroleum Institute at a meeting held in Shreveport. Ted W. Johnson, Union Producing Company, was named secretary-treasurer. The chapter will hold a dinner meeting April 5 and a committee named to arrange a program for this event follows: W. C. Spooner, W. B. Powers, R. O. Garrett, P. D. Baker, and Ted Johnson. Appointed on the membership committee are: C. E. Morris, R. A. Tillery, M. T. McGriff, and John Grubbs. A constitution and by-laws will be submitted at the April 5 meeting when other committees will also be named.

FRANK LYONS, Ohio oil operator, was in the Lethbridge and Taber fields of Southern Alberta, Canada, last week in connection with a 1939 drilling program. He left for Chicago late in the week, planning to return with opening of spring operations.

R. F. GARLAND, T. McMahon and G. W. Curtis last week organized Garland, McMahon & Curtis, Inc., as an Illinois corporation to operate as a drilling contractor. Headquarters have been established at Norris City.

DR. GUSTAV EGLOFF, director of research for Universal Oil Products Company, addressed members of the oil industry at Oil City, Pennsylvania, last week on "Catalytic Cracking to Obtain High Octane Motor Fuels."

DONALD C. BARTON, president of the American Association of Petroleum Geologists, Houston, discussed "The Art of Reading Aerial Photomosaics" before the Dallas unit of the organization last week.

ALTON A. ASHBY, E. D. Lockey, Jr. and Mrs. E. E. Dees last week organized Blue-Flame Gas Company, Inc., as a Texas pipe line company. Offices have been established at Troup.

E. V. YINGLING, of Yingling & Hays, arrived at the firm's recently opened office in Evansville, Indiana, from Wichita, Kansas, last week. He planned to stay about 10 days.

BRIG.-GEN. GEORGE E. McCUAIG, Montreal, Que., and Fred T. Brooks, Hamilton, Ont., last week were named to the board of Davies Petroleums, Ltd., Alberta development firm headed by Maynard J. Davies.

J. D. MILEY, C. J. Conroy, John E. McCall, John Ilgaudas and D. L. Mills have organized the Jonco Oil & Gas Company with headquarters at Buffalo, Wyoming.

S. C. BOSWELL, receiver for Choctaw Cotton Oil Company, Ada, Oklahoma, was commended by Federal Judge Heartsill Ragon at Fort Smith, Arkansas, last week when the court granted a petition ending the company's eight years of receivership. Told that the company's indebtedness had been reduced from

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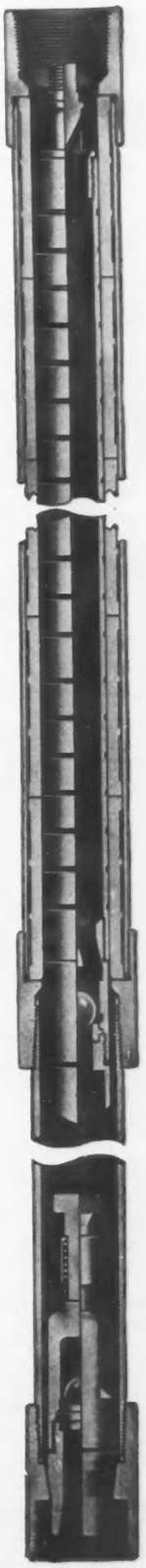

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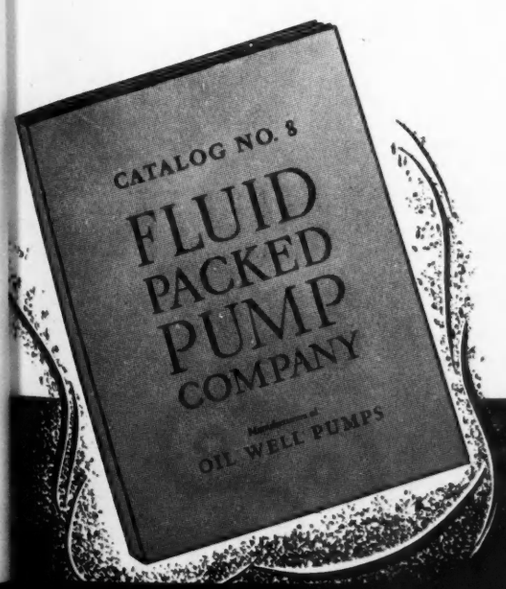

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$1,400,000 to $360,000 and that the business was now solvent, Judge Ragon said, "It's refreshing to see a business that can be conducted in court with a substantial profit." Boswell had been elected vice president and general manager of the company, effective on his release as receiver.

R. N. GAY, Minor Meriwether and Ashley Denton have organized the Iris Oil Corporation. Headquarters are being established in Houston.

J. McCAFFARY, Calgary oil operator, accompanied by his daughter, Mary, was rushed by plane from Swift Current, Saskatchewan, to a Rochester, Minn., hospital last week. McCaffary was removed from a train with which the trip was started because of the seriousness of his condition.

WILLIAM S. ARTHURS, chief scout of Skelly Oil Company, was released from a Tulsa hospital last week following a serious leg operation to complete his recovery at his home.

G. GILDNER, G. Sloan and W. E. Ainsworth last week organized the North Fork Oil Company to operate in Illinois. Headquarters have been established in Bloomington.

VINCENT J. NOLAN, manager of the Egyptian Refinery, Centralia, told a Centralia civic organization last week that refineries operating in that Illinois oil center provide employment, direct and indirect, for 300 local families and have a combined investment of $200,000.

STANLEY BLANCHARD has resigned as geologist for J. C. Shaffer, Oklahoma City operator, to engage in private consulting practice in Wichita, Kansas.

EMMETT ELLEDGE, member of the Kansas geological staff of Phillips Petroleum Company, has been kept from his Wichita office because of illness.

M. PRAY, R. Tift and A. Cathey last week organized the Pray Drilling Company as an Illinois corporation with headquarters at Brownstown.

FAIN GILLOCK is president of the newly organized Gulf States Exploration Company, financed almost entirely with Canadian capital, which will undertake an extensive drilling campaign in Rapides Parish and other sections of Louisiana.

DALLAS HAWKINS and George Harsch, Jr., operators active in the Centralia region of Illinois, were looking over activity in Southern Indiana and Western Kentucky last week.

PAUL SIRLIN, J. C. Bumgarner, George Krekelas, R. George Beauchamp, Claude Keller and Leo L. Cook have organized the Michigan Oil & Gas Developing Company, Inc. The firm has established offices in South Bend, Indiana.

A. E. "AL" CHEYNEY, district geologist in Kansas for Ohio Oil Company, has been transferred to St. Joseph, Missouri.

JAMES I. HILL, B. C. McMillan, Reginald Smith, James Boyce and Rex Lovewell have been named directors of Empire Crude Oil Company, Ltd., a Canadian company active in Alberta.

P. J. FRANZ, William V. Todd and J. W. Fairbairn have organized the Whiteway Oil Company as an Illinois corporation. Offices have been opened in Fairfield. The firm has holdings in Leech Township, Wayne County.

MARION E. BROCK, Gulf Oil Corporation, Houston, has been named chairman of the American Petroleum Institute's division of production 1939 committee on disposal of production waste.

F. B. PLUMMER of the Bureau of Economic Geology, Austin, spoke before the Houston Geological Society March 9 on "Methods of Reducing Water in Wells Producing Both Oil and Water by Means of Chemicals."

G. R. WHITNEY, vice president of Chemical Process Company, Inc., has returned to headquarters at Breckenridge, Texas, after spending several weeks in New York City and Pittsburgh.

LOUIS DES JARDINS, aerial geologist, discussed "Geologic Mapping of Oklahoma Formations and Aerial Photography" before the Tulsa Geological Society last week.

ALBERT W. BAXTER, chemist with Anglo-Iranian Oil Company at the Abadan laboratories, recently was appointed an associate of the Institute of Chemistry of Great Britain and Ireland.

S. J. NEWLOVE, formerly with Anglo-American Oil Company at Ellesmere Port, England, has been placed in charge of the South Shields bunkering station of the company. He succeeds Commander A. W. Stonehouse, retired.

SAM SPRINGER, Wichita oil operator, is the bass voice among the charter members of the Society for the Preservation of Barber Shop Quartet Singers recently organized in the Kansas oil capital.

JESS TOMBERLIN, independent operator, returned to Evansville, Indiana, last week from New York City. With W. F. Lacy, he will drill a McClosky test in Gibson County, Indiana.

B. F. NEWAK, P. M. Raphael and J. F. Drabanski have organized the Century Oil Company to engage in Illinois oil development. Offices have been established at 4726 West Adams Street, Chicago.

DIED:

HERMAN B. GATES, 55, pioneer Wyoming oil man and head of the Gates Oil Company, died in a Denver hospital February 28 after a six months' illness. Also prominent in banking circles, he had served as state treasurer of Wyoming from 1915 to 1919. Surviving are his widow, a son, a daughter and his mother.

R. H. FORD, 40, oil operator, died February 28 at Okmulgee following a three weeks' illness with a streptococcic infection of the throat and lungs. Surviving are his widow, two sons and a daughter.

A. A. MICHELS, 68, drilling contractor who has been sinking shallow wells near Fort Worth, died March 2 of a heart attack in the above city. Funeral services were held at Healdton, Oklahoma.

Houston lays plans for Scouts convention

Date for the 1939 convention of the National Oil Scouts Association, to be held in Houston, Texas, has been set for May 18, 19, and 20, according to Lee A. Adams, president of the association.

At a meeting of officers and Gulf Coast leaders in the association, held in Houston, March 4, Harry Leyendecker of Tide Water Associated Oil Company was selected chairman of the Convention Committee, and C. P. (Jimmie) Chisholm of The Pure Oil Company was chosen as co-chairman, with the following appointed as assistants: Hill C. Adams, Republic Oil Production Company; J. W. Matthews, Arkansas Fuel Oil Company; Elton Rhine, Phillips Petroleum Company; Eric C. Beall, Gulf Oil Corporation; Jimmie Riddle, Humble Oil & Refining Company; and Frank E. Evers, Superior Oil Company.

Safety program at Houston show to have wide appeal

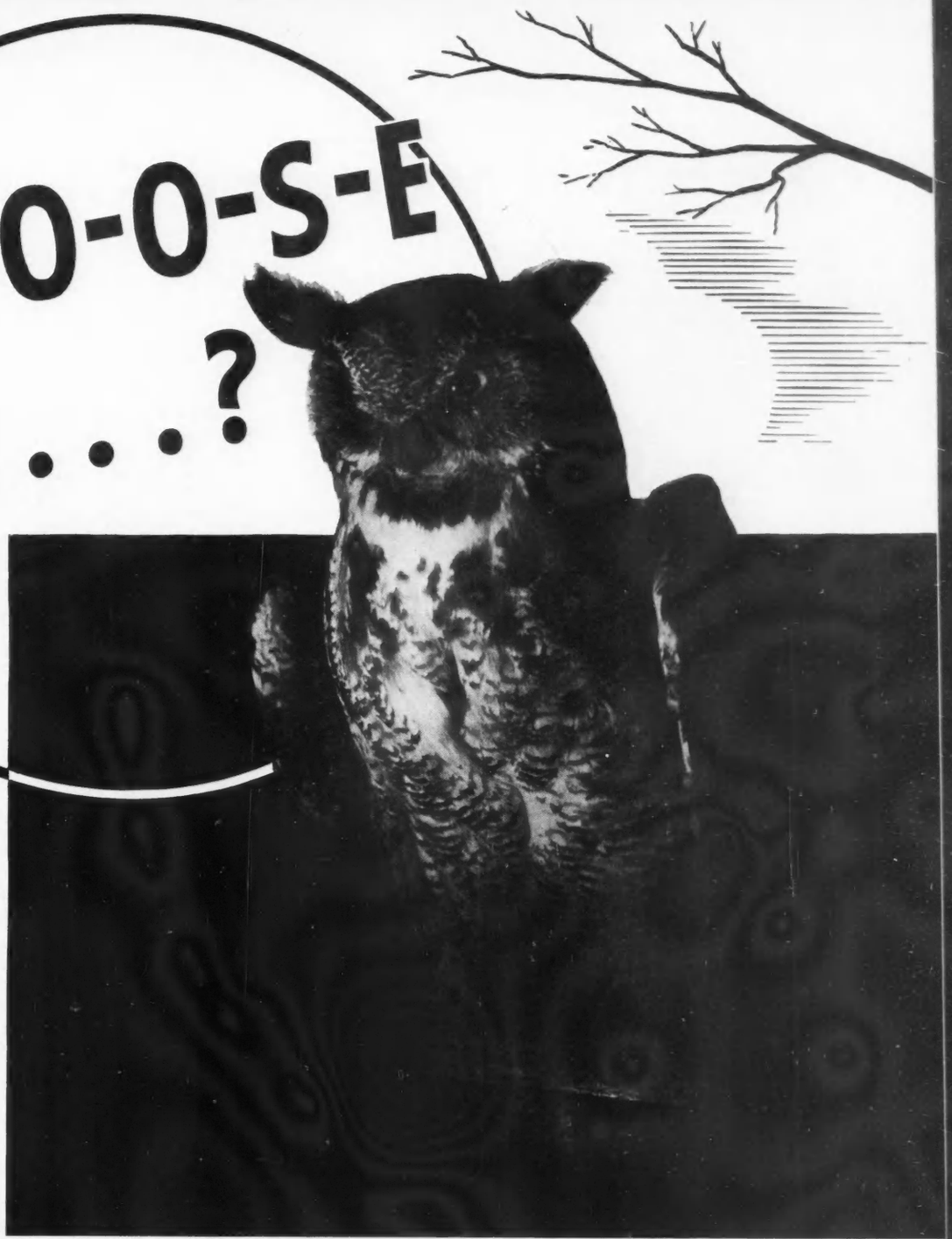
In addition to the technical sessions to be given under the auspices of the General Safety Committee, a program that will be both instructive and interesting to all oil men will be given in the Convention Hall of the Coliseum during the Oil-World Exposition to be held in Houston from April 24 to 29, inclusive. The safety meetings will open on Thursday evening, April 27 with a banquet at the Texaco Country Club for all safety men. After the meetings and round-table discussions of the following day, the program in the Convention Hall will be presented on Friday evening, April 28.

This program will open with the entrance on the stage of a guard of honor consisting of from 50 to 100 oil company employees who have saved a life by first aid or resuscitation. This will be followed by a talk by Caption Nixon, personnel manager of The Texas Company at New York City. Mayor Holcombe of Houston will introduce the Governor of Texas, W. Lee O'Daniel, whose address will be broadcast over a national hook-up.

The Safety Committee will also introduce a 13-year-old high school girl of Big Spring, Texas, Mary Elizabeth Davis, who saved her 11-year old brother's life by resuscitation after he had been overcome in a gas-filled ravine. The girl's knowledge of first aid had been secured by studying the safety manual of her father who is an employee of Continental Oil Company. The boy, Vyrion, and another smaller brother were hunting rabbits in the ravine with their dog. When they ran into the gas, the dog died instantly but the younger brother scrambled out of the ravine and running home, called Mary Elizabeth. The girl pulled Vyrion into the clear and successfully administered artificial respiration cessfully administered artificial respiration.

In recognition of her heroic action, Mary Elizabeth was given the President's Medal Award of the National Safety Council, a Life Saving Certificate of the American Red Cross and, from Continental Oil Company, a wrist watch and a copy of a resolution adopted by the board of directors of the company. Ed Lenzner, general manager of the Oil-World Exposition, advises the girl and her mother will be brought to the safety program at the Houston Oil Show with all expenses paid. Here the Safety Committee will present her with a silver plate.

WHO-O-O-S-E WISE . . . ?



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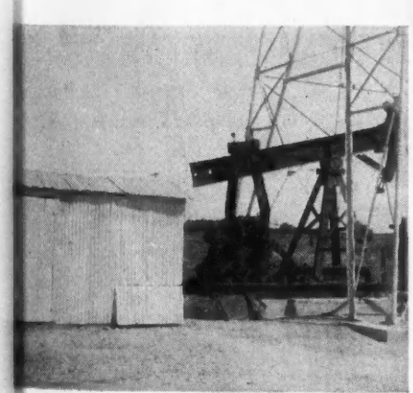

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Men on the Southwestern

San Antonio, Texas

T. A. HALL

of First National Bank in Dallas, will speak on "Appraisal of Oil Properties."

Hall left post of chief engineer in the production division of Tide Water Associated Oil Company, after being with the firm for 16 years, to become chief oil appraisal engineer for First National Bank in Dallas. This was in July, 1938.

E. P. HUBBARD

assistant superintendent of production for Gulf Oil Corporation, Houston, was chairman of the program committee for the Southwestern District of the A.P.I. the past year, and also serves as session chairman Thursday morning.

Graduated in electrical engineering, Texas A. & M. College in 1917. Served two years in army, returned to Texas A. & M. as electrical engineering instructor. Joined Gulf Oil Corporation as electrician in June, 1920. Became assistant chief production engineer in 1921, chief production engineer in 1926, and assistant superintendent of production in June, 1933.

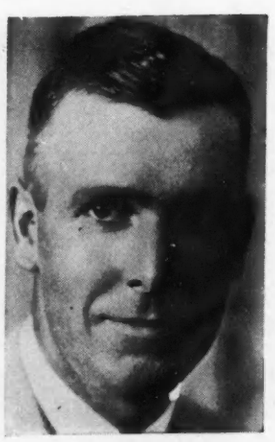
Blank & Stoller

L. A. OGDEN

production engineer, Pure Oil Company, Fort Worth, will be chairman of the Thursday afternoon meeting.

Born November 29, 1893, Tulare, California. Studied electrical engineering at Stanford University, completed course at U. S. Naval Academy, Annapolis, in 1919 with commission as ensign (engineering duties).

With Midway Oil Company from 1920-22; engineer for Amalgamated Oil Company, Huntington Beach, California, 1922-23; associate petroleum engineer, U. S. Bureau of Mines, Bartlesville, 1923; production engineer, Empire Gas & Fuel Company, El Dorado, Kansas, 1924-26; production superintendent, Marland Oil Company, McCamey, Texas, 1926; production engineer, Empire Companies, Bartlesville, 1927 - 33; joined Pure Oil Company, 1933.



E. V. FORAN

of consulting engineering firm of Parker, Foran, Knode & Boatright, Austin, Texas, speaks on "Condensate Wells—Completion and Recycling Operations."

Born in Seattle, Washington, May 1, 1895. Received degree of mining engineer from University of Idaho in 1921.

Entered oil business in June, 1922, with Mid-West Refining Company's gas department. Later was assistant natural gas engineer for U. S. Bureau of Mines at Salt Creek field, Wyoming. Came to Texas in 1926, and engaged in consulting petroleum engineer work, which has now expanded into the present consulting concern.

GEORGE A. HILL, JR.,

president, Houston Oil Company of Texas, and vice president for production of American Petroleum Institute, speaks on "Proration and Competition," Friday morning.

Graduated in law from University of Texas in 1911. Five years later became attorney for Houston Oil Company of Texas. Made vice president of Houston Pipe Line Company, a subsidiary, in 1925. Executive vice president and director of parent company was next step, followed by presidency in 1932.

Vice president in charge of production activities for American Petroleum Institute since 1934.

AL BUCHANAN

president of Al Buchanan Drilling Company and Al Buchanan Production Company, San Antonio, Texas is general chairman of the San Antonio committees for the Southwestern District meeting.

An independent producer since 1910, and a drilling contractor since 1919, he has drilled over 500 wells.

Member advisory committee for Southwestern District of A.P.I.; vice president for Southwest Texas of Independent Petroleum Association of America; vice president of Southwest Texas for Mid-Continent Oil and Gas Association; vice president of South Texas Chamber of Commerce; and president of San Antonio Petroleum Club.

CARL A. YOUNG

Secretary of the Division of Production of American Petroleum Institute, and director of the Division of Standardization also, will shoulder much of the behind scene work.

Born June 18, 188-, at Minneapolis. Wide experience, both in domestic and foreign fields, in the supply end of the business, being associated with Lucey Manufacturing Corporation over a period of years. Made vice president of firm in 1917, but resigned in 1924 to be director of A.P.I. standardization work. Appointed secretary of Division of Production in 1929.

CHARLES H. ROW

district geologist, Sun Oil Company, San Antonio, Texas, is co-author of paper on "Oil Development and Production Practices in Southwest Texas."

A graduate in geology from University of Oklahoma. With Sun Oil Company since 1921, with 14 years experience in Southwest Texas. Was first president of South Texas Geological Society.

District A. P. I. Program

March 16-17, 1939

W. R. BOYD, JR.

executive vice president of American Petroleum Institute, New York, speaks Friday morning.

Born January 7, 1885, at Fairfield, Texas. Admitted to Texas Bar at age of 19, and shortly afterwards went to Washington as secretary to member of Congress. Resigned to engage in law practice in Teague, Texas. When town was incorporated, although but 21 years old, was elected mayor. Was active in national peace campaign and in support of League of Nations. Joined American Petroleum Institute in 1920 as assistant general secretary counsel. Named executive vice president in 1928.

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PAUL D. TORREY

geologist in charge of exploration work in Texas and Louisiana for Sloan & Zook Company, will be chairman of Friday afternoon session.

Born June 28, 1903, in West Feliciana Parish, Louisiana. Received geology degree in 1925 from University of Pittsburgh, and petroleum engineers degree in 1927.

Worked for U. S. Geological Survey after graduation. From 1928-1930, consulting engineer and geologist for Northwestern Pennsylvania Oil Producers Association and Pennsylvania Grade Crude Oil Association. From 1930 to 1933, an independent consulting geologist in Bradford, Pa. Next two years, geologist for lumber interests in Mississippi and Louisiana. Employed by Sloan and Zook Company in 1935, and sent to Houston in present capacity.

R. H. McLEMORE

production engineer, Sun Oil Company, Dallas, is co-author of paper "Oil Development and Production Practices in Southwest Texas."

Graduate of Texas A. & M. College in petroleum engineering. Associated with Sun Oil Company since 1933. Formerly located in Southwest Texas, and is familiar with activities of that area.

HAROLD VANCE

head of petroleum engineering at Texas A. & M. College, will present a paper entitled "Petroleum Engineering Education and Its Relationship to the Petroleum Industry."

Graduated in petroleum engineering from University of California in 1923. His experience was obtained with the U. S. Bureau of Mines, U. S. Geological Survey, Marland Oil Company, and as a consulting engineer.

C. A. DUNLOP

of Humble Oil & Refining Company, Houston, speaks on "Trends and Developments of A.P.I. Pipe Standards" on Friday, March 17.

Graduated by University of Liverpool, England. Active for many years in the Institute's Division of Production work, including chairmanship of several standardization committees.

W. S. MORRIS

field chairman of East Texas Engineering Association, Kilgore, and chairman of Southwestern District of American Petroleum Institute Division of Production, serves as chairman of the Friday morning session.

Born at Wilmington, North Carolina, July 29, 1901. Graduated from North Carolina University, with B.S. in Civil Engineering in 1924. Took junior engineering course with Empire Gas & Fuel Company.

Joined U. S. Bureau of Mines, Petroleum Division in 1926. In December, 1929, joined engineering department of Indiana Territory Illuminating Oil Company. Proration work prompted him to study law, passed Oklahoma Bar examination in 1936. Became field chairman of East Texas Engineering Association in 1936.

Rivkin

EMBYE KAYE

Tide Water Associated Oil Company and Seaboard Oil Company, speaks on "Recovery of Condensate from Distillate Wells."

Born December 25, 1894, at Mizpah, New Jersey. Attended Harvard University. Entered oil business as gasoline and production material man for Skelly Oil Company. Served as lease clerk, oiler, engineer, blender, gas tester before becoming gasoline plant superintendent. Was general superintendent in charge of gasoline plants from 1922-30, when was put in charge of refining. Elected vice president in 1933. Resigned April 1, 1938, to join Wasatch Oil Refining Company, and recently joined Tide Water Associated Oil Company and Seaboard Oil Company.

W. F. FULTON

chief chemist, Union Producing Company and United Gas Pipe Line Company, Houston, speaks on "Laboratory Technique and Equipment for Study of Condensate."

Born March 1, 1900, Shreveport, La. Studied chemical engineering at Louisiana State University. Employed by Louisiana Oil & Refining Company, Shreveport, January 1, 1920 to 1924, as chief chemist, refinery superintendent. In 1924 headed refining construction work for Chalmette Refining Corporation, New Orleans. January 1, 1925 to 1928, employed by Palmer Corporation as chief chemist. September, 1928-1931, constructed and operated eight carbon black plants for Palmer Carbon Company in Texas Panhandle. January, 1931, changed to present position.

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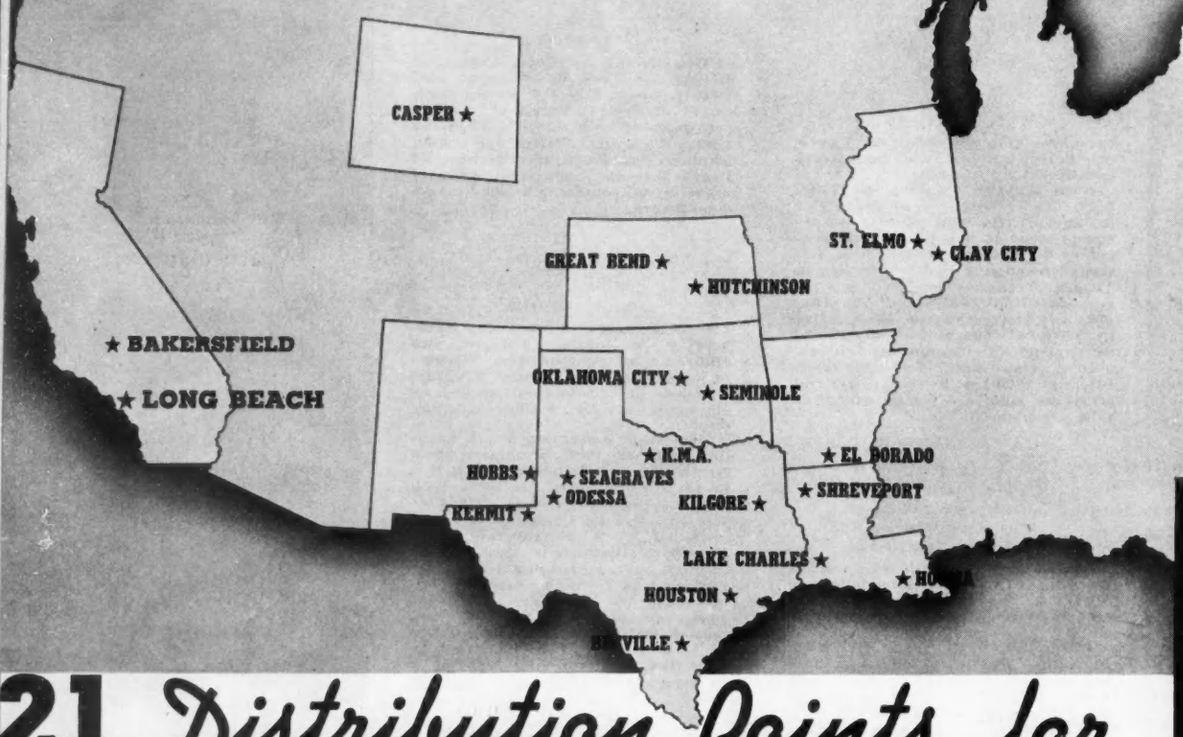

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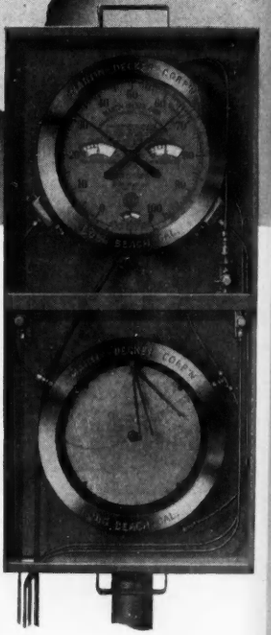

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THE WEEK'S NEWS SUMMARIZED

Legislation

Demand for federal regulation of the oil industry continues to spread in those organizations under Secretary Harold L. Ickes' domination. Suggested last month in the report of the National Resources Board, of which he is chairman, the proposal was again voiced by Chairman Percy Tetlow of the National Bituminous Coal Commission, part of the department, as a means of making regulation of the coal industry effective. Admittedly seeking to safeguard the competitive position of coal, Tetlow bid for support by pointing out that regulation would prolong the life of our oil reserves.

Greater uniformity in the laws, regulations and practices of the oil states would contribute materially to the cause of conservation, it is declared by George W. Holland, director of the Petroleum Conservation Division. One state which cooperated with the division reduced materially the waste of gas in one of its fields; another which would not cooperate will recover only $7,000,000 of a possible $32,000,000 worth of oil, he said.

Decision of Senator Connally's subcommittee to hold no hearings on the bill to make his "hot" oil act permanent has aroused the ire of the independent marketers.

Senator Harrison has been asked by Paul E. Hadlick, secretary of the National Oil Marketers Association, to reject the favorable report which the subcommittee is expected to make, and turn the bill over to an "impartial" subcommittee to hold hearings at which, he promises, information will be submitted showing conclusively that the act should not be extended.

Declaring there is a "rotten mess" in Mexico, Representative Hamilton Fish recommends replacement of Ambassador Josephus Daniels by an experienced diplomat such as Undersecretary of State Sumner Welles and accuses the State Department of trying to "cover up" the failure of President Roosevelt's "Good Neighbor" policy after the House Foreign Affairs rejects his resolution calling for information regarding Mexican expropriations of American oil, farm and mining properties.

Taking President Roosevelt's offers of cooperation with industry, the House Appropriations Committee continues to slash the government money bills, cutting more than $6,000,000 from the estimates for the Interior Department, including additional funds sought for the Petroleum Conservation Division and the Geological Survey.

The committee omitted funds for administration of the "hot" oil act, because it is due to expire before the beginning of the next fiscal year, but will finance enforcement in a deficiency measure after Congress acts affirmatively on legislation to continue federal support of state proration laws.

Proration

Four hundred Californians attended a 2½-hour meeting at which the seriousness of the industry's position in the state was reviewed, and a plan consisting of 13 recommendations for proration were presented for vote within a week. The plan outlined calls for the proration of wells on a potential basis, divided into three classes according to ability to produce. California's curtailment is voluntary, with approximately 78 percent of the operators cooperating. Producers were warned that unless conditions were corrected immediately federal control could be expected within a year.

Many prominent oil executives are to appear at the Texas statewide hearing March 15. They will present data relative to activities of their companies, especially concerning storage and markets of crude and refined products. Stocks of gasoline are expected to receive particular attention because of their present high level. Meanwhile, Commission chairman Lon A. Smith announced he expected the Saturday shutdown might be lifted on April 1, and that by May 1 the Sunday shutdown might also be abandoned. This would mean an allowable of approximately 1,500,000 barrels for April and 1,800,000 barrels for May.

The Interstate Oil Compact Commission will hold a meeting in Austin on March 15 and 16. The first day they will set in on the Texas statewide hearing.

A resolution has been introduced into the Arkansas legislature that would make the state the seventh member of the compact.

News Section Index

General News 51-62

Allowable Picture	54	Market Situation	57
Oil at the Capitols	52	Crude Oil Production	59
Oil in the Courts	56	Acetylene Meeting	60

World Developments 43

Field Development News 63-83

Arkansas	77	Mountain States	79
California	80	New Mexico	79
Eastern States	68	Oklahoma	64
Illinois	67	East Texas	72
Indiana	68	Texas Gulf Coast	74
Kansas	66	North Texas	71
Kentucky	68	Panhandle Texas	71
Louisiana Coast	75	Southwest Texas	73
North Louisiana	76	West Texas	69
Michigan	81	Wildcat Development Report	82

Oil at the Capitols

Federal control urged coal men and petroleum conservation director . . . Congress refuses to interfere in Mexican expropriation negotiations.

Interior Department again pleads for federal oil control

Federal regulation of the oil and gas industries, as essential to successful regulation of the coal industry, and greater uniformity in laws, regulations and practices of the oil producing states, are seen by officials of the Interior Department as the major aims to be sought by any oil conservation program, it is disclosed by testimony taken by the House Appropriations Committee during hearings on the department's appropriation bill for the coming fiscal year.

Oil and gas regulation as a corollary to coal regulation was urged by Percy Tetlow, chairman of the National Bituminous Coal Commission, who pointed out that those fuels offered active competition to coal.

Replying to a question by Representative Emmet O'Neal (Dem., Ky.), as to the desirability of general regulation of all fuels, the commission head declared that "all these natural fuel resources should be brought under regulation so that the conservation of those fuels, the prevention of waste of the fuels and the opportunity of those fuels to meet on a fair basis of competition should be established."

Each of the three industries, he said, has suffered from uncontrolled competition leading at times to overproduction, ruinously low prices and resource waste, and such conditions in any one of the three has inevitably reacted on the other two but coal has suffered the most from inter-fuel competition and has endured the greatest loss of business.

"The plain fact is that unregulated competition has tended to develop excess capacity in all three of the great fuel industries and that they have in effect been cutting each other's throats," he said. "Abnormally low prices for oil and gas displace coal. Low prices for coal react on prices of oil and gas."

Regulation of competing fuels, Chairman Tetlow said, will merely prolong the period in which they are available economically and, he predicted, the time will come when coal again will be the major reliance of the country and its by-products developed far beyond anything new even imagined.

Authorized only to "cooperate" and without any power to enforce its program, the Petroleum Conservation Division has not been uniformly successful in inducing the oil states to adopt conservation measures, it was disclosed by George W. Holland, director.

While in one state the division was successful in substantially reducing the waste of more than a half-billion cubic feet of gas each day in one field, in another state officials said they "were not ready for controlled production" with the result, Holland declared, that "out of a possible $32,000,000 worth of oil calculated recoverable only $7,000,000 worth will be recovered by methods known today."

"The lack of uniformity in the oil-conservation laws, regulations, orders and practices adopted and employed in the several oil-producing states has been the principal cause of economic disturbances in the oil industry," the director explained.

"These disturbances are of sufficient magnitude to threaten seriously the gains which have been made during the past five years in oil and gas conservation. The need for oil conservation has been demonstrated. It is sufficient to say that unless the operating practices in the United States are such as to eliminate all possible avenues of waste, including production methods which fail to achieve the highest possible recovery, there will be a scarcity or shortage of oil in the United States long before there is a corresponding shortage abroad. If we could continue during the next few years as we have in the past five, it is possible that a sound and substantial program of oil conservation will be achieved, based as it properly should be, upon the cooperative action of the state and federal governments."

Sadler charges coal is pushing federal control

Railroad Commissioner Jerry Sadler charged coal operators with fostering the move for federal oil control in a statement issued at Austin last week.

Efforts are being renewed in some eastern and northern states for the federal government to take over and supervise production of oil, and this effort apparently has the backing of the National Resource Commission and several cabinet members, as well as having the support of Amos L. Beaty, who was paramount in the petroleum code administration and who is regarded as an important figure in the oil industry.

Many in the oil industry seem to be unaware that coal producing states are providing the biggest support for this federal control of oil movement, and should it succeed Texas oil operators and all connected with the industry, at least 300,000 in Texas, will be the victims, for the coal barons of the East believe that with federal control oil will be strangled and their own product pushed forward.

We have several instances of federal control, which the public should recognize before too late. The railroads are wholly dominated by the federal government and nearly all them have gone broke. The federal government also invaded the cotton growing industry and the cotton farmer is worse off than before. This same condition will be experienced by the oil industry unless all its leaders, backed by the citizens of Texas and other oil states, begin immediately to let their delegations in Washington and federal bureaus know and know emphatically that we want state rights to control oil production.

We have succeeded in conserving our oil fields; we have succeeded in giving a helping hand to many independents; we have succeeded in stabilizing the industry and to relinquish this authority will be ruinous. The oil industry has no easy problems but being right on the ground we are in better position to solve these problems than some bureau in Washington, which would be out of touch with conditions.

Congress again refuses to enter Mexican muddle

Refusing to interfere in State Department negotiations for a settlement of the question of reimbursement for Mexican expropriations of American property, the House Foreign Affairs Committee on March 8 voted to table a resolution offered by Representative Hamilton Fish, (Dem., N. Y.), requesting the President to furnish data in regard to seizures.

The decision of the committee was reached following an executive meeting at which the committee considered a letter from Secretary of State Cordell Hull opposing any undue publicity of his department's efforts to settle the controversy and informing the committee of certain phases of the situation, which committee members later refused to discuss.

Rejection of the Fish resolution was the second refusal of the committee to attempt to intervene in the negotiations, a similar resolution by Representative Martin J. Kennedy (Dem., N. Y.), having been tabled last month.

Charging that his resolution had been killed by the Democratic majority on the committee, Representative Fish asserted "there has been a virtual conspiracy of silence to cover up the breakdown of the 'good neighbor policy' in Mexico and the seizure of property belonging to our citizens.

"The American people have a right to know these facts," he said. "In the last analysis, they must decide what our governmental policy should be, and if the State Department continues to try to deceive them or hide the facts from them, it will jeopardize our free institutions and representative form of government. I demand that the rotten mess in Mexico be exposed and the people be informed of all the facts.

"Actually," the congressman declared, "the 'good neighbor' policy of the Roosevelt Administration in Mexico has encouraged the seizure of American-owned farms, mines and oil properties, and has been the direct cause of our losing 50 percent of our export trade with Mexico last year. It is likewise encouraging the radical and communistic elements and destroying American prestige.

"The expropriation of American-owned

properties without adequate compensation is a polite word for robbery and for the practice of communism in Mexico. The searchlight of pitiless publicity should be turned on the blunders and failures of our policies toward Mexico, and Ambassador Josephus Daniels recalled before more properties are seized and more damage done to American prestige and trade."

Ambassador Daniels, he said, should be replaced by an able and experienced diplomat. He suggested Under Secretary of State Sumner Welles who, he said, speaks Spanish fluently, and "who would bring order out of chaos, protect American property and restore our trade and friendly relations with Mexico."

California ready to fight for tideland ownership

With joint committee hearings scheduled to be held in Washington, D. C., March 22, the Long Beach Harbor Commission last week joined the fight against four congressional resolutions challenging cities' and states' title to tidelands and submerged lands. The commission ordered Attorney Clyde Leach to attend the hearings and he will be followed by a delegation of four representing the City of Long Beach and by interested southern California oil company executives. Attorney General Warren of California will submit a brief on the law to Attorney General Murphy.

Leach said those sponsoring the fight against the government are hopeful of killing the resolutions in committee. "Even if we won eventually in court and we feel sure of our legal rights, the mere raising of a question of title would cast a blanket over the rights of cities to make improvement, embarrassing all progress during years in court," he said. While two of the four resolutions are aimed only at California oil tidelands, the others would affect the entire nation. Texas and Louisiana congressmen are reported rallying to California's side.

Marketers protest senate not hearing hot oil act protests

Rejection by the Senate Finance Committee of the favorable report on the Connally "hot" oil bill to make the present act permanent, expected to be submitted by the subcommittee composed of Senators Connally, Guffey and Townsend, was asked of Chairman Pat Harrison of Mississippi this week by Paul E. Hadlick, secretary of the National Oil Marketers Association.

In a letter to Chairman Harrison on March 7, Hadlick protested the decision of the subcommittee to hold no public hearings on the measure, at which independent interests could register their disapproval of the proposal to make the Connally Act permanent.

Intimating that the subcommittee was biased, he asked that a "new and impartial subcommittee" be appointed for the purpose of holding hearings, asserting that "the subcommittee appointed has indicated its unwillingness to even listen to arguments in opposition to the bill despite the developments of the past two years.

"It is true that hearings were held on this legislation two years ago," Hadlick said, "but we contend that the recommendation of the committee at that time was contrary to the weight of the testimony.

"In addition many things have happened since that time to warrant public hearings on the advisability of continuing this legislation—most important of which were the disclosures at the Madison oil conspiracy trials that the gigantic conspiracy of the major oil companies in the pool buying of gasoline was predicated on the original passage of the Connally Act.

"The writer is anxious to appear before your committee, or a subcommittee thereof, to present information that we believe will show conclusively that the legislation in question should not be extended."

Economy move reduces government oil funds

Determination of Congress to enforce economy in government operations in order to lessen the need for increased tax revenues was demonstrated March 8 in the slashing of appropriations for operation of the Interior Department during the coming fiscal year by more than $6,000,000 from the amount recommended by the Bureau of the Budget.

Reporting the bill to the House, the Appropriations Committee disclosed that it had cut the budget estimates all along the line, with the result that little expansion will be possible during the coming year in the oil activities of the department.

Because of the fact that the Connally "hot" oil act will expire in June and has not yet been continued, the committee omitted the $230,000 provided for enforcement of the act this year and also lopped off a $5000 increase for other activities granted by the Budget Bureau, giving the Petroleum Conservation Division $30,000. Provision for financing the administration of the Connally Act will be made in a deficiency measure after Congress has continued the law or, as asked by Senator Connally, made it permanent.

The appropriations committee also refused to accede to a $15,000 increase in the fund for public lands and naval petroleum reserve activities of the Geological Survey and restricted it to $315,000, the same as for the current year.

The fund for oil and gas investigations of the Bureau of Mines was left untouched at the present level of $260,000, the bureau having asked for no increase.

Government information on oil storage to be continued

Funds for use by the Bureau of Mines in maintaining current information on the stored-oil survey which was started three years ago have been approved by the Bureau of the Budget, and will be used to give the states and the federal government a continuous picture of crude oil storage, as to both quantity and quality, it was disclosed by the testimony of Dr. John W. Finch, director of the bureau, during House Appropriation Committee hearings recently.

Discussing the needs of the bureau for funds for operation during the coming fiscal year, Dr. Finch explained that this work can be continued without increasing the annual appropriation of $260,000.

Despite an increased appropriation for the General Land Office, the government is still losing money on oil and gas leases, it was testified by Commissioner Fred W. Johnson.

In 1938, discussing the appropriation for the current fiscal year, Commissioner Johnson told the committee the government was losing approximately $250,000 a year. This year he admitted the office is still behind in exchanging permits for leases, and is still short of personnel; but, he indicated, the loss has been materially reduced.

New Texas tax bill includes oil levy

Last week there was introduced in the Texas Legislature an omnibus tax bill designed to meet the demands of all members of a tax-conscious legislature. Because it provided for taxing almost every industry, and at the same time provided additional pension money, but still retained some restrictions, sponsors of the bill thought that it might make progress. At the end of the week, however, it was fairly well bogged down, and there was considerable doubt in the minds of most observers that a tax bill for pension purposes could be passed through the House at this session.

The composite bill offered fixed a maximum pension payment of $15 per month to persons over 65 whose net income is less than $30 a month, regardless of the fact that they might have children who are able to contribute to their support.

The bill contemplated a matched payment of $15 from the Federal Government, and it thus sought to guarantee old people a net income of $30 per month.

Funds also would be provided for the teacher's retirement fund and the fund for destitute children, each of which might receive as much as $1,500,000 a year.

The bill which is to raise between $30,000,000 and $70,000,000 to meet these pension payments provides for a 2½ percent sales tax which is applied also to the sale of gas and electricity for domestic use, and for telephones.

The tax applies, likewise, to amusement admissions in excess of 50 cents. The retailer is required to collect the tax and remit to the comptroller. Since the levy is based on 1-cent to each 40-cent sale, no tokens would be necessary, and the retailer-tax collector would be able to make a small profit on the deal.

A severance tax of 25 cents a ton on sulphur is levied and there is a ¾ of one percent tax on natural gas. The oil tax is to be ¾ cent on values up to $1.00 or ¾ of one percent when the price of oil exceeds $1.00 a barrel.

Efforts to set the bill for special order on Tuesday, March 14, resulted in a close vote and final defeat; however, the bill is expected to come up in due course, and will, undoubtedly, be the subject of lengthy debate in the House. It will be more acceptable to the Senate, because of the sales tax feature.

Allowable Picture

New curtailment plan presented to California oil producers . . . Texas operators to study economic trends of industry at statewide hearing March 15.

California hopes for proration solution

Pleading that individual operators must realize their individual responsibility to the oil industry, Ernest E. Pyles, chairman of the emergency executive committee, held 400 representatives of California's petroleum industry for 2½ hours at a mass meeting in Los Angeles Thursday afternoon, as he reviewed the seriousness of the industry's plight in the state and presented for ballot the fact finding committee's report making recommendations to improve the situation.

Thirteen major problems were presented to oil producers to be voted upon by ballot by Wednesday, March 15.

The meeting climaxed more than two months of effort on the part ofthe emergency committee to get California's crude production down to 600,000 barrels per day. Pyles approved present methods of voluntary crude curtailment; warned producers that unless they set their house in order the federal government would step in to control their business within another year; and read the report of the fact finding committee which set forth 13 recommendations for approval.

California's curtailment program is voluntary. Today 78 percent of the operators are conforming to the umpire's allowable and 22 percent are not curtailing. In an endeavor to retain voluntary curtailment in the state and avoid the necessity of state control, rules and regulations are being recommended.

Texas hearing will go into gasoline storage situation

Many prominent oil executives have indicated to the Texas Railroad Commission that they will appear at the statewide hearing on March 15, at Austin, prepared to present data relating to the activities of their companies, especially concerning storage and markets of crude and refined products.

It is expected that this evidence will be the basis for adjusting allowables during April and May, and for that reason a letter sent by the commission to these executives is most significant.

"The purpose of this hearing," said the letter, "is to consider all things that pertain to the prevention of physical waste in the production of oil and gas in the state of Texas, and all other matters which properly come under the statute which governs . . . in the issuance of orders covering the production of oil and gas.

"You will recall that we had such a hearing December 15, 1938, and at that hearing much good information and evidence was presented . . . which enabled the railroad commission to issue an intelligent order covering the production . . . for the months of January, February and March, 1939.

"It is the purpose, at the next hearing, to review the testimony given at the December hearing, to the end that we may see whether or not we have kept within the limits set out at that hearing as being the proper means of preventing physical waste of petroleum.

"At the last hearing every person that we requested to come to the hearing responded to the request without the necessity of having a subpoena issued. We are not issuing subpoenas for this hearing, but trust that you will come without being subpoenaed.

"It has come to my attention, through the study of the status of the industry, that stocks of gasoline, both finished and unfinished, at refineries, in transit and at terminals should be carefully checked. We have been making appeals to the industry to reduce runs to refineries but it now appears that it will be necessary for us to go into stocks of gasoline, finished and unfinished, at refineries, in transit and at terminals, so that waste may not occur in this the most volatile form, namely, gasoline in storage in excess of requirements.

"Here is the list of questions which we intend to propound so that we may get the general statistical position of the industry at this time.

"1. What are your present stocks of gasoline in all forms, finished and unfinished?

"2. How does this compare with a year ago?

"3. What has been the change in your gasoline stocks since December 1, 1938?

"4. What is your present crude inventory?

"5. What, if any, change has there been in your crude stocks since 1938?

"6. Do you expect to draw from stocks between now and May 1, 1939?

"7. What was your gasoline stocks as of March 1, 1938?

"8. What was your crude stocks as of March 1, 1938?

"9. What do you expect your gasoline inventory to be on March 1, 1939?

"10. What do you expect your crude inventory to be on March 1, 1939?

"11. What is to be your policy with reference to inventories from now until May 1, 1939?

"Will you be so kind as to let me know by wire, if convenient, or by letter, whether or not we can expect you to be here?"

May Abandon Saturday Shutdown

Meanwhile Railroad Commissioner Lon A. Smith, in a carefully considered statement, announced that he expected the commission would raise the Saturday shutdown on April 1, and that by May 1, the commission could abandon both shutdown days. This would mean bn allowable of approximately 1,500,000 barrels daily for April, and 1,800,000 barrels in May.

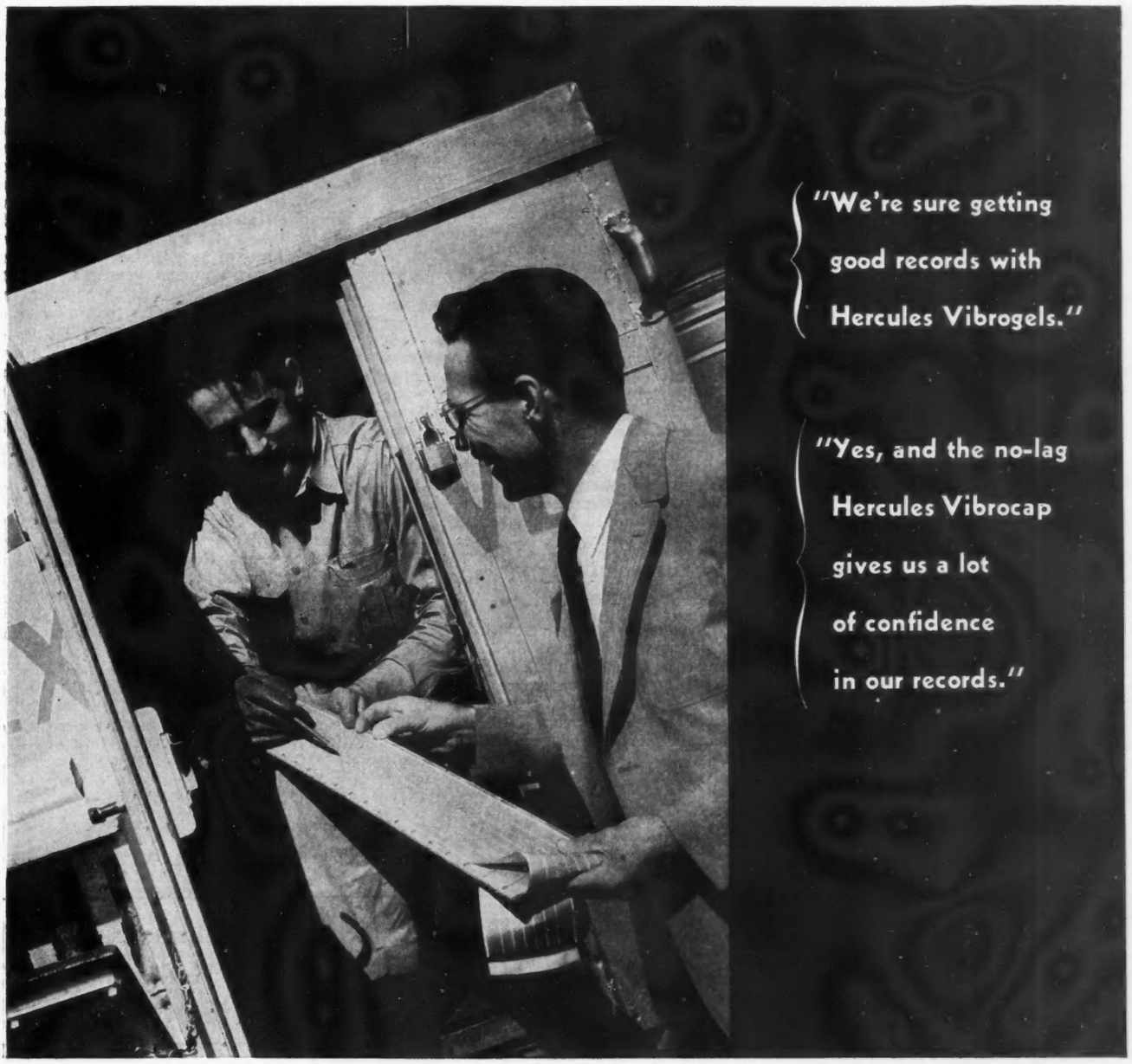
"The physical conditions of the oil fields," Smith said, "together with the fact that the consuming period will be on at this time, is my authority for arriving at this conclusion. It is based on the data presented at the hearing before the commission on February 20.

"It will be remembered that, during the entire period of shutdowns, I have been for curtailment of production by some uniform cut based on a proper allocation between the fields."

Smith said that he was having prepared for study a comparison of two plans of proration which were offered at the last statewide hearing as a means of correcting discrimination alleged to exist between Texas oil fields. One plan, advanced by F. W. Fischer, Tyler,

Thirteen Recommendations Made to California Operators for Proration of Production

1. That the present organization for proration be continued;
2. That based upon potentials, all wells in the state be divided into three classes. (All wells with potentials below 25 barrels, those between 25 and 1000 barrels, and those with potentials above 1000 barrels daily);
3. All wells with potentials of 25 barrels daily or less, be permitted to produce at their maximum capacity;
4. That any and all existing wells with potentials above 1000 barrels daily be given a maximum allotment suggested at 250 barrels to 300 barrels daily;
5. That any and all existing intermediate wells with potentials between 25 barrels and 1000 barrels daily should be given allotments on a graduated percentage basis. No wells should receive an allotment of less than 26 barrels or more than the maximum allotment;
6. That a field allotment should not be more than the sum total of the individual wells allotments in that field;
7. That the production of a property or lease should be the sum total of the individual well allotments;
8. That in the event our recommendations are adopted each well in the state should receive an allotment and any well, which is shut in and the allotment not permissibly produced as provided for in No. 7 from the property on which the well is situated should lose its allotment;
9. That aggressive transfers should not be permitted; that defensive transfers should only be permitted in exceptionally justifiable cases after notice to and approved by the umpire and central committee; the umpire should keep a record of all approved transfers indicating the wells from which and to which the transfer is made; that no other type of transfer be permitted;
10. That the new well and the new zone problem is one of the most important in the entire proration procedure as well as the most difficult to solve; the subject now is under investigation in every oil producing state; at present in California, and except by discouraging all unnecessary drilling and by the alleviation of lease obligations. No relief is in sight; a new well committee should be appointed within the central committee, charged with the responsibility to determine the causes for any unnecessary or excessive drilling;
11. That the oil umpire order potential tests on all wells in order to place them in their proper classification;
12. That the central committee give consideration to setting the state's quota as an average monthly quota for a quarterly or semi-annual period;
13. That the central committee review the possibilities of including gas production as a factor in curtailment procedure.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would provide for the assignment to all wells of the marginal allowance as provided in the statutes. The remaining oil needed to supply the market would then be distributed among the non-marginal producers on the basis of reserve in place. A second plan was advanced by the North Texas Oil and Gas Association, and supported by operators in K-M-A, proposing that the commission fix the allowable on the basis of the depth of the well. That is, for a well 500 feet deep, the commission might give one barrel per hundred feet, or five barrels. A well 1000 feet deep would get 10 barrels and one 3000 feet deep, 30 barrels.

Propose Wider Spacing

Subsequently Smith announced that the commission planned to change the statewide spacing rule so that only one well to 10 acres would be allowed. The old rule, which has been in effect since November, 1919, allows the drilling of wells 150 feet from lease lines and 300 feet apart, which means a well to 2.06 acres any place in Texas where the commission has not substituted some other rule. There is one other exception, and that is, fields which are producing from piercement type salt domes, where operators may drill as they please, because of the disjoined formations.

The new plan, however, would forbid drilling closer than 330 feet from lease or boundary lines and 660 feet from the nearest well, outside the piercement type salt dome fields.

The commission would, of course, continue its policy of fixing special spacing rules in those fields where such a plan seems advisable, but the new rule would prevent the development of any new field on spacing closer than one well to 10 acres.

Most of the major operators have long advocated this plan, and as independents have seen their money disappearing into leases too densely drilled, they have concluded that wider spacing is certainly advisable from the economic standpoint, and most engineers believe that the same ultimate recovery will result, because operators will be able to afford the best equipment to assure full recovery if fewer wells are drilled.

It is possible that this question may be discussed finally at the hearing this week, which promises to be the largest and most important hearing the Texas Railroad Commission has ever had. This is due, in part, to the fact that the new commissioner, Jerry Sadler, will for the first time sit at a statewide hearing where outstanding executives will appear as witnesses.

Compact meeting called at Austin March 15-16

The next meeting of the Interstate Oil Compact Commission has been scheduled for March 15 and 16 at Austin. Thus the hearing will be coincident with the Texas statewide proration hearing before the House Committee on Oil, Gas and Mining on a bill to give the Texas Railroad Commission control over refinery runs.

Shortly after the announcement was made, Arkansas conservation officials voted to ask the legislature to authorize the membership of Arkansas in the oil compact. Compact Chairman Ernest O. Thompson immediately wired Governor Carl E. Bailey of Arkansas congratulating him on this move, and inviting the group to attend the Austin meeting. It will be necessary for the act to be passed by the Arkansas legislature, but it is possible this may be done before the hearing this week.

The compact meeting has been scheduled for March 15, but no place had been set. Chairman Thompson had been instructed to determine the meeting place, and in a telegram setting the date, he said:

"Nearly all of the crude buying and refining company heads will be here to testify under oath as to the true situation on oil and refined products. This affords a wonderful opportunity to all the oil compacting states to learn first hand the true facts now at the beginning of the consuming season.

"Therefore, I am, pursuant to resolution passed at Fort Worth, calling the spring meeting of the Oil Compact Commission for Austin, Texas, March 15 and 16."

Arkansas joining Interstate Pact

Introduction of the resolution by which Arkansas would become the seventh member of the Interstate Oil Compact Commission followed a conference March 5 in Fort Smith between Governor Bailey of that state and Governor Phillips of Oklahoma. Other officials of the two states attended the meeting, which brought consideration of other problems common to the adjoining states.

It was the second time the Oklahoma governor had urged the executive of another oil-producing state to foster legislation looking to conservation of oil. In February he met John Stelle, lieutenant governor of Illinois, at St. Louis to urge that legislation to continue the Illinois membership in the compact as well as conservation legislation for oil be recommended to the state legislature. That conference brought no promise of urging the legislation and no announcement of accomplishment. Stelle has been an opponent of regulation in Illinois other than a measure which would give the state an output equal to the consumption of the state.

The first break in the attitude of independent producers toward conservation came last week with a split in the ranks of the Independent Oil Producers and Royalty Owners Association, whose president John Pugh said the association would "launch an extensive program in behalf of conservation."

Frank T. Egan, who was secretary-treasurer of the Illinois Independent Oil Producers and Royalty Owners Association, announced formation of the Producers and Royalty Owners Association, whose program would be "orderly development of the oil resources of Illinois until such time as there is market available for all of the oil which can be produced in the state at the market price." It will oppose proration or any other legislation having for its purpose restrictive limitation of Illinois production.

Oil in the Courts

Defense motion for bill of particulars and list of witnesses to be used in second Madison trust suit granted . . . Trial scheduled for October 2.

Motions granted in new anti-trust suit

Federal Judge Walter C. Lindley at Danville, Illinois, last week granted motions of defense counsel for a bill of particulars and a list of government witnesses to be used in the second Madison conspiracy trial of major oil companies at Madison, Wisconsin. Following the hearing, the court took under advisement another defense motion asking that the government confine the case to one count of conspiracy.

The motions were entered on behalf of nine major oil companies and eight company officials who did not join with 24 corporate and individual defendants in pleas of nolo contendere following trial of the first case last year. A motion to quash the indictment was withdrawn by defense counsel.

Judge Lindley, who was named to take over trial of the government's oil industry conspiracy cases after the four-month trial on the first indictment left Federal Judge Patrick T. Stone far behind with his work, has set retrial of 18 defendants involved in the first case for October 2. The trial will be held in Madison, where the indictments were returned.

For the most part, defendants left remaining in the second case are companies and individuals dismissed during, or at the conclusion of the first trial. They are:

Gulf Refining Company and William V. Hartman, Pittsburgh, vice president; The Texas Company, and W. S. S. Rogers, New York, president; H. W. Dodge, New York, vice president, and S. B. Wright, Chicago, territorial manager; Globe Oil & Refining Company of Oklahoma, Globe Oil & Refining Company of Kansas and Globe Oil & Refining Company of Illinois, and I. A. O'Shaughnessy, Minneapolis, president of the Globe companies; Tide Water Associated Oil Company, and Edward L. Shea, New York, president, and J. W. Warner, Tulsa, vice president; Barnsdall Refining Corporation and E. B. Reesor, Tulsa, president, National Refining Company and Deep Rock Oil Company.

Market Situation

Pennsylvania Grade prices get third increase of the year . . . Chicago gasoline postings up 1/8 cent, despite continued heavy addition to stocks.

Good demand and limited operations aid markets

The oil industry's market outlook has become somewhat brighter lately, as demand for most of the petroleum products has been relatively good, while the supply of crude and refined oils has been fairly well balanced with the demand.

Some strengthening of the markets for crude oil and of products has occurred, and it appears quite possible that additional improvement will occur in coming weeks.

Various favorable developments have occurred lately in the crude oil markets. Pennsylvania grade crude was advanced 10 to 12 cents a barrel early last week, after having been increased similarly on two previous occasions since late January. A scheduled reduction of Oklahoma-Kansas prices by an independent refining company has been held in abeyance. Pipe line proration has been discontinued in the Healdton field of Southern Oklahoma, by Ben Franklin Refining Company, of Ardmore.

The markets for refined products have become quite steady, and tank car prices of gasoline were advanced 1/8 cent a gallon last week in the Chicago territory.

Back of the current improvement of the markets, apparently, are the relatively good prevailing demand for oils and the present fairly satisfactory regulation of crude production and refinery runs.

The Bureau of Mines has estimated that total gasoline demand in March will be about 4 percent larger than in March of last year. And for several months gasoline consumption has been exceeding general expectations, because of milder than normal weather.

Exports of petroleum and products have been holding up better than generally anticipated, although shipments declined appreciably in recent weeks.

The outlook for balancing crude oil production with requirements in March is favorable. Six prominent producing states, accounting for approximately 90 percent of United States production, have March allowables that are in the aggregate a little below indicated demand, as estimated by the Bureau of Mines. Consequently, crude output for the month probably will not be excessive.

There is some danger that refinery runs may be pushed too high and that gasoline stocks consequently may be increased to uneconomic levels. The gasoline inventories now total a little over 85,000,000 barrels, whereas economists have estimated that about 80,000,000 barrels would be sufficient on reaching March 31. Therefore, it would be desirable to hold the gasoline stocks around the present levels during the rest of the month. And to do so would require the holding of crude runs to about 3,200,000 barrels daily, as against 3,230,000 barrels a day actually run in the week ended March 4.

Although such curtailment of refinery runs may not be achieved, that goal should not be unusually difficult of attainment. For crude production, under the March allowables, will be at economic levels; and if refiners would process only currently produced crude, without dipping into storage, their gasoline output probably would not exceed current consumption, and little or no gasoline would be forced into storage.

Outlets for two new Kentucky fields

An outlet for the new Henderson County pool opened two weeks ago by Sun Oil Company and Kentucky Natural Gas Company's G. Trigg 2 will be provided with completion of a four-inch four-mile line from the well to the Ohio river. Fordsville Gathering Line began surveying for the line last week. Oil will be stored in tanks at the river's edge, to be moved by barge to northern refineries.

The pool opener, located 12 miles from production in the Corydon section, 8 miles southwest of Henderson and 2 miles north of Corydon, started flowing from the McClosky two weeks ago at the rate of 8 barrels an hour. During a 3-hour test last week, it flowed 40 barrels. Lack of storage has prevented a longer test.

Aetna Oil Service Company announced completion of a new line connecting the Birk City pool of Daviess and Henderson counties with a terminal on the Ohio river. With two new large barges, the company is constructing a floating dock, 25x142 feet, about a mile south of the Wilson Ferry. Over 100 producing wells have been drilled in this pool, opened less than a year ago with the first McClosky lime producer to be drilled in Kentucky during the current development program.

Pennsylvania crude raise features price changes

Price changes in the oil industry during the past week were predominantly favorable. Crude prices were advanced again in the Appalachian district, and a previously announced reduction of prices by a Mid-Continent independent refining company was postponed. The only changes of importance in the wholesale prices of products were advances of 1/8 cent a gallon for gasoline in the Chicago area.

Leading purchasers of Pennsylvania grade crude effective March 6 increased postings 10 to 12 cents a barrel. That was the third increase for the district since late January, and it reflected the continuing improvement of demand for those oils, which are used primarily for making lubricants. The current business recovery has brought some improvement in demand for industrial lubricants, and the Pennsylvania grade crude market consequently has benefited.

Although the purchasers did not make any explanatory announcements in connection with the raising of the crude postings, the action apparently was based directly on the fact that refiners of the Pennsylvania grade oil had been processing over 10,000 barrels a day more than the current production, having been obliged to draw from storage to that extent.

Buckeye (Macksburg, Ohio) oil was advanced 10 cents, to $1.55 a barrel, and all other grades were raised 12 cents a barrel, the new postings being as follows: Pennsylvania grade oil in New York Transit lines, $2; Bradford district oil in National Transit lines, $2; Allegheny district oil in Bradford Transit lines, $2; Pennsylvania grade in Southwest Pennsylvania Pipe Line, $1.65; Pennsylvania grade in Eureka Pipe Line system (West Virginia), $1.59. Corning grade oil in Buckeye Pipe Line remained unchanged on March 6 at $1.02 a barrel.

National Refining Company, Tulsa, indicated on March 7 that it would hold in abeyance for three weeks its previously announced plan for buying crude oil for its Coffeyville, Kansas, refinery on the basis of published tank car gasoline quotations. The plan provided for basing crude prices on the price of 70-72 octane gasoline, that is, multiplying by 18½ the low average price of that grade gasoline for a month, to determine the price of 36 gravity crude. At the current price of the gasoline, the reduction in crude oil prices would be 22 cents a barrel.

The decision to postpone action on a crude-price schedule, however, was not offered as final solution. Hill let it be known that his company is determined to have a profit from operation of its refining plant at Coffeyville, Kansas. "The National Refining Company," he said, "can not continue to pay the posted market price for crude oil and keep on losing $1330 a day. We are going to make a profit or I'm going to shut down the Coffeyville refinery.

Indications are that the matter will be considered by both producers and officials of the company in the hope of finding a solution by April 1.

The company has more than 500,000 barrels of crude oil in storage at Coffeyville. It does not need more than 6000 barrels daily and is offered as much as 9300 barrels daily.

The markets for refined products lately have become somewhat stronger, and minimum tank car prices of gasoline in the Chicago market are now 1/8 cent a gallon higher than a week ago.

U. S. motor gasoline ranged in the

Oklahoma market last week about as follows: 62 octane and below, 3⅝ to 4¼ cents a gallon; 63 to 66 octane, 3⅞ to 4¼ cents; 67 to 69 octane, 4⅛ to 4⅝ cents; 70 to 72 octane, 4⅜ to 5 cents.

Corresponding prices in the Chicago market were 3⅜ to 4 cents, 3¾ to 4 cents, 3⅞ to 4¼ cents and 4 to 4⅝ cents.

In East Texas, 60-62, 400 end point gasoline was priced generally at 4 cents a gallon.

Natural gasoline, grade 26-70, was priced generally in the Mid-Continent markets, f.o.b. refineries at 2½ to 2⅝ cents a gallon, and sales were reported at 2⅜ cents f.o.b. Breckenridge, Texas.

Kerosene prices f.o.b. Oklahoma refineries ranged from 3⅞ to 4¼ cents a gallon for the 41-43 water white grade, and from 4 to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3½ to 4⅛ cents and 3⅝ to 4⅜ cents.

Fuel oil prices were mostly unchanged last week. In the Chicago market range oil was priced from 3⅜ to 4 cents a gallon. The No. 1 white oil was priced from 3⅜ to 3⅞ cents, and No. 1 straw from 3⅜ to 3⅝ cents. No. 2 straw was 3⅛ to 3½ cents. No. 3 oil was 3 to 3⅜ cents. No. 5 oils were 57½ to 65 cents a barrel. The No. 6 oil was quoted at 35 to 45 cents.

Fairly good situation shown by statistics

Fairly satisfactory trends but some further excesses were reflected in the latest weekly statistics of the oil industry. Crude oil production in the week ended March 4 was under the indicated daily demand for March, although materially above the February demand estimate. Crude runs to refinery stills increased further and were higher than economically desirable. Gasoline stocks rose again, although the gain was less than a million barrels. Crude oil stocks were increased about one half million barrels. Stocks of gas oil and fuel oil were further reduced sharply, as demand continued heavy.

United States crude oil production averaged 3,314,850 barrels daily in the week ended March 4, having been reduced 14,000 barrels from the previous week's level. The Burea uof Mines has estimated that demand for domestic crude in March would be 3,340,000 barrels daily, as compared with 3,220,000 barrels daily in February. The actual output in the week of March 4 was 7/10 of 1 percent smaller than in the corresponding week last year.

Crude runs to stills were up 45,000 barrels daily in the week ended March 4, having risen to 3,230,000 barrels a day from 3,185,000 barrels daily in the previous week. The new rate was 3.2 percent above that of 3,130,000 barrels a day in the corresponding week last year. The refinery runs have been running somewhat higher than desirable, and gasoline storage consequently has been increasing more than necessary.

The stocks of gasoline increased about 800,000 barrels in the week ended March 4, having risen to 85,379,000 barrels. That quantity was 7.3 percent smaller than the amount held at the corresponding time last year. But it was greater than economically desirable, as petroleum economists have estimated that about 80,000,000 barrels of gasoline stocks would be sufficient upon entering the spring-summer consuming season March 31.

The increase of nearly a million barrels in gasoline stocks in the week ended March 4 occurred in the face of some curtailment of production of that product. The total production of gasoline during the week was 9,420,000 barrels, which was 30,000 barrels less than in the previous week.

Gas and fuel oil stocks were further drawn upon to the extent of approximately 1,750,000 barrels, having been reduced to 131,930,000 barrels. They were then only 7.7 percent larger than at the corresponding time last year.

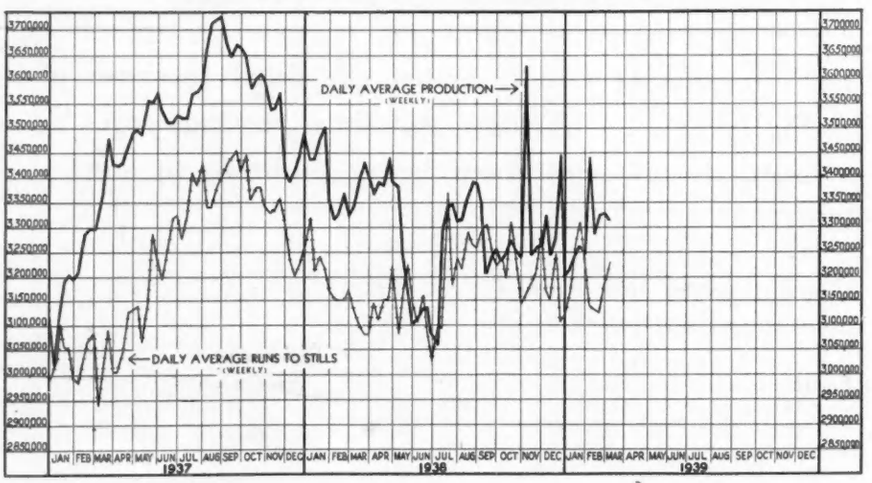
Crude oil inventories were increased about 500,000 barrels in the week ended February 25, having risen to 271,758,000 barrels. The crude stocks are comparatively low, being not far above their 17-year low that was reached in December. They are now about 11 percent smaller than a year ago.

East Texas-Illinois crude exchange arranged

The exchange of 150,000 barrels of East Texas crude held by Stanolind Oil & Gas Company for an equal number of barrels of Illinois Basin oil owned by Magnolia Petroleum Company has been arranged on a basis that may result in the renewal of contract, which calls for deliveries to average 3000 barrels daily. Each pays the posted price and transportation costs.

Stanolind Oil & Gas Company, fifth largest producer in the East Texas field, will make the deliveries to Mag-

United States Crude Oil Production and Refinery Runs


DAILY AVERAGE PRODUCTION→
(WEEKLY)
←DAILY AVERAGE RUNS TO STILLS
(WEEKLY)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
1937
1938
1939

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
September 25, 1937	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
March 19, 1938	3,322,550	3,080,000	306,380,000	*93,192,000	122,067,000
March 26	3,405,600	3,080,000	307,557,000	92,858,000	122,979,000
April 30	3,396,150	3,215,000	307,147,000	91,339,000	128,270,000
May 28	3,098,650	3,150,000	301,583,000	87,946,000	134,315,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	137,801,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	144,294,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	146,926,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	150,468,000
October 1	3,231,800	3,235,000	280,852,000	68,602,000	151,759,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	153,719,000
November 12	3,243,250	3,180,000	273,394,000	67,551,000	*154,666,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	153,634,000
December 10	3,245,100	3,150,000	†269,509,000	68,587,000	150,779,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	144,823,000
January 28, 1939	3,248,250	3,235,000	271,763,000	77,279,000	139,349,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	133,671,000
March 4, 1938	3,314,850	3,230,000	.....	85,379,000	131,930,000
March 5, 1939	3,339,700	3,130,000	‡305,167,000	92,151,000	122,471,000
Change in past year	—0.7%	+3.2%	—10.9%	—7.3%	+7.7%

* All time peak. † Lowest for 17 years ‡Stocks, February 26, 1938.

nolia Petroleum Company at Mexia, using the facilities of Humble Pipe Line Company to the latter point and those of Stanolind Pipe Line Company for a short haul across the Mexia district to Magnolia Pipe Line Company's Wells tank farm and pump station site.

The Illinois oil to be supplied by Magnolia Petroleum Company will be gathered by its system and routed through the Illinois Pipe Line Company to Standard Oil Company of Indiana's Wood River refinery.

Resume running all oil in Southern Oklahoma

Resumption of 100 percent purchases in the Healdton field by Ben Franklin Refining Company, Ardmore, restored Southern Oklahoma fields to a status of running all oil produced. This concern had been taking 80 percent of lease output in this field. The change will add between 400 and 500 barrels daily to purchases.

Previously exchange of properties between Carter Oil Company and Shell Petroleum Corporation had restored normal runs to properties in other Southern Oklahoma fields. The transaction also shifted some gathering systems of Oklahoma Pipe Line Company to Shell Petroleum Corporation. Carter Oil Company took over scattered Shell leases in the Greater Seminole area in exchange for the properties in Southern Oklahoma.

Crude Production

California increase of 19,800 barrels factor in raising United States to 3,337,925 barrels daily

Production of oil in the United States averaged 3,337,925 barrels daily during the week ended March 11. Production for the preceding week was increased by 22,675 barrels daily and the estimate of demand for domestic crude placed by the Bureau of Mines at 3,340,000 was only 2075 barrels higher than production. Major decreases in Texas and Kansas were more than balanced by gains in all other producing areas.

March allowables lowered Texas production 9250 barrels daily to 1,315,300 barrels for the past week; a figure 48,600 barrels under the bureau recommendation and 3157 barrels less than the state allowable.

California production jumped to 628,200 barrels daily, surpassing the previous week by 19,800 barrels daily and over-running the state allocation by 26,200 barrels daily and federal estimate by 39,800 barrels.

Louisiana registered a 2375-barrel increase in averaging 269,650 barrels daily. This rate exceeded the state allowable by 15,450 barrels and the bureau recommendation by 9950 barrels.

Oklahoma output, 446,275 barrels daily, was greater by 5075 barrels than that for the preceding week, and 18,275 barrels greater than the state allowable. It was less than the bureau estimate by 26,930 barrels, however.

Kansas production showed a 5900-barrel decrease. Production for the week at 139,000 barrels daily failed to reach the state allowable by 17,850 barrels and the federal recommendation by 11,300 barrels.

Gains in Arkansas, Michigan, the Mountain States, and Eastern States were small, none exceeding 3400 barrels daily, but helped to register the general increase.

Wichita.—Completions dropped to 18 in Kansas last week while 20 wells were started. The completion total consisted of 13 producing wells, total initial output of 10,352 barrels, and 5 dry holes. Butler and Rice counties had 4 locations each. Other counties showed these totals: Russell, 3; Barton and Ellsworth, 2 each; Ellis, Graham, Greenwood, Kingman and Sedgwick, 1 each.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in March)	State Allowable in March	BARRELS DAILY FOR WEEK ENDED March 11	BARRELS DAILY FOR WEEK ENDED March 4
TEXAS—				
Texas Panhandle			61,500	63,100
North Texas			76,800	79,900
West Central Texas			29,550	30,150
West Texas			204,900	207,500
East Central Texas			94,150	94,000
East Texas Field			384,050	383,500
South Texas			250,850	252,400
Texas Gulf Coast			213,500	214,000
Total Texas	1,363,900	1,318,457†	1,315,300	1,324,550
CALIFORNIA—				
Long Beach			50,200	49,200
Santa Fe Springs			28,500	28,700
Huntington Beach			27,600	25,500
Dominguez			21,900	21,800
Ventura Avenue			33,900	34,700
Midway-Sunset			50,400	50,900
Kettleman Hills			57,400	54,600
Wilmington			84,900	84,100
Others			273,400	258,900
Total California	588,400	602,000*	628,200	608,400
OKLAHOMA—				
Oklahoma City			115,900	110,350
Seminole Area			98,250	96,825
Fitts			30,200	30,525
Others			201,925	203,500
Total Oklahoma	473,200	428,000	446,275	441,200
LOUISIANA—				
North Louisiana			73,450	72,125
South Louisiana			196,200	195,150
Total Louisiana	259,700	254,200	269,650	267,275

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in March)	State Allowable in March	BARRELS DAILY FOR WEEK ENDED March 11	BARRELS DAILY FOR WEEK ENDED March 4
KANSAS—				
Burrton-Haven			9,050	8,650
Russel County			19,050	21,000
Silica			6,975	8,550
Others			103,950	106,700
Total Kansas	150,300	156,850	139,000	144,900
NEW MEXICO	109,700	109,700	108,500	102,200
MICHIGAN	47,700		54,200	54,000
ARKANSAS	50,000	53,090	53,450	52,675
MOUNTAIN STATES—				
Wyoming	53,600		52,050	52,100
Montana	13,500		13,150	12,700
Colorado	4,200		4,150	4,100
Total Mountain States	71,300		69,350	68,900
EASTERN STATES—				
Pennsylvania Grade			70,500	70,200
Southern Illinois (New Pools)			146,750	144,800
Illinois-Indiana (Old Pools)			7,800	7,350
Others, Eastern			28,950	28,800
Total Eastern States	225,800		254,000	251,150
Total United States	3,340,000		3,337,925	3,315,250

† Daily average, considering Saturday and Sunday shut-downs.

* Recommendation of Central Committee of California Oil Producers.

Acetylene Meeting

Oil field work is stressed at technical sessions of the 39th annual convention of the association

The 39th annual meeting of the International Acetylene Association, held in Houston March 8 to 10, was featured by interesting technical sessions, timely addresses on economic subjects, and an unusually heavy registration. The diversified nature of the program occasioned favorable comment from the 3000 members and visitors from all parts of the United States and Canada. More than a dozen industries were represented.

In the keynote address, "What Goes On Here," by J. H. Van Deventer, editor of The Iron Age, New York, stated the American system of enterprise is being threatened by two sources. They are the anti-machine complex at home, and the totalitarian movement from abroad. Van Deventer quoted from speeches from a few senators and two cabinet members to the effect that "unemployment has increased because of machines." He countered with the statement that new payrolls had been created by machines, as in the automobile industry, automobile manufacturers alone have contributed more than 84 billion dollars in wages since 1900. Many intellectual radicals in this country regard our government as an outmoded institution, he said. The speaker urged the people to steer clear of courses in government that could lead to totalitarianism and dictatorship.

The association's Morehead medal, awarded annually to the person or persons who have done most to advance the industry, was awarded to John J. Crowe for "his unceasing and successful technical activities in the utilization of acetylene." He is well known for his studies of metallurgical phenomena and has been particularly active in the development of apparatus for oxy-acetylene welding and cutting, while manager of research for Air Reduction Sales Company.

Abstracts of some of the petroleum technical papers follows:

Review of Latest Practices in the Pipe Line Field

By W. B. POOR, engineer, United Gas Pipe Line Company, Houston.

A review of the progress made in the pipe line field during the last 12 to 18 months indicates three major phases of advancement:

1. Improvements in welding facilities with particular respect to new and improved tips and rod.

2. The field stress relieving of arc welds.

3. The development and widespread acceptance of "Wrinkle Bending."

Of particular interest to the pipe line operator, should be the comparatively recent development of a new 4-flame tip for bell-hole or position welding; a new 6-flame tip for double-jointing pipe and for roll welds; and a new low alloy steel rod.

The four-flame welding tip, as the name suggests, consists of four separate flames or jets burning from a common head. Two small parallel flames are used to preheat the pipe ahead of the welding puddle, a third and larger flame preheats the welding rod, while the fourth flame accomplishes the actual welding.

Distribution of heat is far more efficient with this new tip. The relative position of the flames has been so designed that the only necessary movement of the blow-pipe is continually forward.

The six-flame welding tip is similar in design to the four-flame tip with the exception that it has two additional preheating flames.

The development of the composition of welding rods has been aimed toward higher strength and greater ease of control in the welding operation. A new rod has recently been designed to give tensile strengths 10,000 to 12,000 pounds per square inch greater than rods previously used in pipe line welding, and yet retains sufficient ductility to meet all normal requirements.

A comparatively new application of oxy-acetylene blow pipe which may assume considerable importance in the future is that of "stress-relieving" arc-welds in the field. It has been found that certain types of this work can be effectively and economically stress relieved in the field by an oxy-acetylene flame.

By far the most interesting development in recent years in the field of pipe line construction is the development of the practice of wrinkle bending. Wrinkle bending is a modification of the creased bend and corrugated tangent which has, for some years, been in use in the fabrication of steam power plant piping.

A summary of the advantages to be obtained from wrinkle bending, on pipe lines or in station work, as compared to the conventional method of field pipe bending are in part as follows:

1. It is the only satisfactory method of bending light wall pipe.

2. It is the only satisfactory method of bending high carbon pipe.

3. Mill coated or yard coated pipe may be bent in the field with far less damage to the protective coating, resulting in economic saving.

4. On pipe line construction, where only occasional and small degree bends are required, such bends may be made by the same crew and equipment employed in the laying gang, without materially delaying the progress of the work.

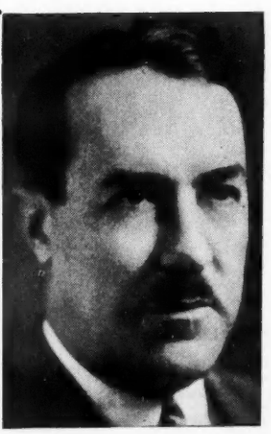
5. A great deal of excavation and

Dolisie Heads International Acetylene Association

H. P. Dolisie, of Montreal, Canada, and Henry Booth, of New York, were today elected president and vice president respectively of International Acetylene Association for 1939. H. F. Reinhard, also of New York, was re-elected secretary. The election was held during the Association's 39th Convention being held this week at Houston, Texas.

Born and educated in France, and decorated with the French War Cross for bravery during the World War, Dolisie was a well-known figure in steel manufacturing circles in his native land when in 1929 he joined Societe L'Air Liquide of Paris, manufacturers of welding equipment and supplies. A year later he came to Canada as assistant manager of Canadian Liquid Air Company, Limited, and in 1934 he took up his present position as managing director of that company.

Booth, who is sales manager for Shawinigan Products Corporation, New York City, will continue as treasurer of the Association, as well as vice president. Reinhard, who begins his eighth year as secretary, is associated with Union Carbide Company, New York City.



H. P. DOLISIE

HENRY BOOTH

H. F. REINHARD

time can be saved in rough country.

6. From an engineering standpoint, of special importance is the fact that the pipe wall opposite the bend is not thinned from its original thickness and at the point of wrinkling compression squeezes the pipe so that the metal is slightly thicker than the original wall.

7. Wrinkle bending adapts itself particularly well to the stove pipe method of constructing pipe lines.

Gas Welding of Oil Well Casing

By G. R. MILTON, shop foreman, Sinclair Prairie Oil Co., Arp, Texas.

For a number of years, we have been welding oil well casing. In order to speed up production, a number of water-quench tests were made, with satisfactory results, but in actual operation it was found that the human element would not allow us to continue this practice.

Our next problem was the engagement of competent welders. As the pipe would be run vertically, the weld would be entirely different from that used by pipe-line welders, who might be entirely capable of making a roll weld on a pipe line, but who could not be any better welder than a student in this different type of welding.

For greater speed in the actual running of this pipe, it was converted into forty-foot lengths, which reduced by one-half the number of field welds necessary at the well.

Very little instruction was necessary to enable the drilling crew to handle the welded casing as expeditiously as ordinary screw casing. The joint was lowered in the hole and the slips set to leave approximately five feet of pipe above the derrick floor; the next joint was picked up and set on top of this lower joint, being held in place by specially prepared clamps which had spacers to keep the joints the proper distance apart.

A cooling time of one minute after completing the weld was allowed on the first third of the string; the next third was allowed to cool two minutes, and the remainder cooled for three minutes, before being run into the hole.

Approximately two hundred oil wells were cased by this method in the East Texas field by our company. During recent months, the same method has been used by our company in the Kansas field.

Maintenance of Oil Field Equipment

By C. G. ALHART, welding supervisor, Texas Iron Works, Houston.

A welder, or a repair truck in the field a few yars past, was indeed a rare sight. Heavy pieces of equipment were hauled many miles to make the necessary repairs, with a corresponding loss of time and increase in drilling costs. Today that picture is entirely changed. When the drilling equipment is moved in on location, a field welding truck is among the first equipment called upon. The trucks are usually of one and a half or two-ton capacity, equipped as follows:

Two or more cylinders of oxygen;

Acetylene generator and possibly a cylinder of acetylene (as a standby);

Welding and cutting torches and the necessary regulators, with at least 100 feet of hose;

A complete stock of welding and brazing rods and fluxes;

Air compressor, air motor, air driven drills, chipping hammers, flue cleaners, and air grinders;

Arc welding machine, and the usual hand tools, consisting of hammers, chisels, wrenches and pipe templets.

Where threads are necessary to connect a valve or meter, a short nipple with a thread on one end is welded on to the pipe and it is ready to connect to the valve.

Guard rails and other safety appliances are quickly and economically fabricated from old pipe and angles with the aid of the cutting and welding torch.

Boilers used in the oil fields are subjected to very hard usage, usually carrying pressures of 350 pounds, and seldom have very good water, therefore they are repaired more often than those in the average plant.

Clutch jaws on the draw works of a drilling rig are in continuous use throughout the drilling of a well and of course are subjected to very hard wear. The welding repair truck operator builds the jaws up to proper size with the arc and then with a large tip in the welding torch washes the jaws to proper shape and dimensions without the use of any machine tools.

Without the oxy-acetylene torch the removal of alloy pump inserts would be quite a problem, but by melting out a section of the insert approximately one inch long and as nearly through as possible without damaging the pump body and the immediate application of cold water, the insert shrinks and is easily removed.

Sometimes the pump castings proper, crack or break under the strain. Again the field welding truck is called into service.

It is not uncommon for one or more teeth in the rotary table to be broken from either pinion or main gear. When this happens, new teeth are built up with the arc and washed to proper size and shape with the welding torch, without removing the broken parts from the derrick floor.

Bearing bodies and caps on mud pumps are often bronze welded and bushings installed, also new babbitt bearings poured with the aid of oxy-acetylene equipment.

Tool joints become badly worn from continual use, and are often removed from the drill stem with the cutting torch.

Each piece of equipment is entirely dismantled and completely rebuilt from the ground up, in a major overhaul.

The greater portion of the rotary tables today are made from cast steel, and the gear and pinion are subjected to very severe service. The teeth eventually wear out of shape, leaving too much slack in the table. Each tooth is built up to sufficient size and then washed to the proper size and shape with the welding torch.

Master bushings and adapters that fit in the center of the rotary table to hold the kelly bar are removed from the rotary table and built up, then washed to proper shape and size with the welding torch.

On the draw works or hoist, the main skids are often bent and require straightening. Chain prockets become worn and are built up to size and then cut and ground to a finish.

Catheads wear badly, and are built up time after time and put back into service. Control levers are straightened, and broken controls are either welded or new ones fabricated with the aid of the cutting torch.

Elevators, and especially elevator latches, are subject to very hard wear, as they lift the drill pipe in and out of the hole. They are kept in repair with the aid of the cutting and welding torch.

Some drilling rigs, especially those used on "wildcat" locations, use heavy duty oil engines for power. When heads and cylinders fail, as they often do, they are repaired in the conventional manner and bronze welded with the welding torch.

Oxy-Acetylene Application of Hard Facing Materials to Oil Well Drilling Bits

By CHARLES H. SHAPIRO, Chief Metallurgist, Reed Roller Bit Company, Houston.

The very earliest attempts at surfacing fishtail bits with an acetylene torch were made by applying cast iron, tool steel, etc. These materials were the forerunners of metals which had very desirable qualities. Further development produced the metals in general use today; which from our present viewpoint can be considered eminently successful. These early rods, as surfacing materials, were followed by a special type rod made up of a powdered element or alloy, which together with an ordinary mild steel rod were encased by a thin closed strip or tape of low carbon steel. This was the first successful over-lay application, and because of its characteristic of becoming hard on deposition, was termed "self-hardening."

This rod was soon followed by a material, cast in the form of a welding rod, made by combining chromium, tungsten, and cobalt metals to form a uniform, homogeneous alloy. Its technique of application was quite similar to the materials previously deposited by the acetylene torch. This alloy had a higher quality of resistance to abrasion than had the other hard-surfacing metals of that day.

Following the homogeneous hard-surfacing rods, came the introduction during the years 1927-28 of diamond substitutes called tungsten carbides. Tungsten carbide was at first quite expensive, at one time selling for $320.00 per pound. Despite its high cost, the advantages in its use became apparent and desirable.

Tungsten carbides, as used today, fall into two general classifications; sintered carbides, used mainly for metal cutting; and cast carbides, used as hard-surfaces for cutting edges of earth-boring tools, as well as other applications for the resistance to wear and abrasion.

In building up a worn blade, it is necessary to weld out from the worn or cut-away edge, with a material that has physical characteristics approximating the original base metal. In order to properly flow and control the molten metal from the "building-up" rod, a copper back-up template or form is used. The first step in the building-up of worn fishtail bits is to properly mount the bit in the fixture or holder. The edge of the trimmed wing, and the adjacent area are first brought to a dull red heat, approximately 1300° F. by heating with the acetylene torch. One blade is built-up at a time. The tungsten carbide inserts are laid out

upon the surface of the plate in the pattern desired. The wing or blade of the bit is then built out to its original shape.

New fishtail bits, or detachable welded-on blades, are hard-surfaced by a more or less standardized procedure. The blade surface properly cleaned is preheated to a dull red heat (1300° F.). The spot desired for setting the insert is heated until it becomes molten in an area somewhat larger than the size of the insert. Without letting the spot cool, the end of the mild steel rod is heated until it begins to "sweat," at which time it is touched to a hot insert and the two, further heated until they adhere. The hot insert is then submerged to the desired depth into the molten spot of the base metal, and positioned. Heating is then discontinued by removing torch from the spot. Slight cooling will allow the spot to solidify, at which time the tacking rod is melted from the hard metal piece. Composite rod or tube metal, of grain size desired, is laid down, after a surface retouching, as a facing over the entire hard surface section of the blade. Following this, reaming edges are faced with crushed carbides.

The conventional soft formation core bit wings or blades are dressed in a similar manner to regular fishtail bits. It is not considered the best practice to attempt the welding-in of insert hard metal at the time the blade is built-up. The inserts are set after the building-up step is completed. Special type coring bits, digging bits and reamer wings are processed in a similar manner to soft formation core bits.

Cutters or cones of rock bits have their efficiency and life materially increased by hard-surfacing applications. The present practice is to hard-surface at least one face of each tooth of the cutting members. The cutters which make contact with the wall of the hole, in addition to the facing on each tooth, have their gauge or bevel edges also surfaced with hard metal.

The hard formation core bit head has rotating cutting members similar in construction to rock bit cutter cylinders. The teeth of these are generally faced with tube metal as described in the rock bit application. The "sweating-on" process is also finding application to rock core bit cutting elements.

Because of the severe impact or hammering effect upon the cutting edge of a cable tool bit, necessarily applied because of its drilling action, considerable difficulty has been experienced in making hard-surfacing materials "stand-up." Homogeneous type metals have only been partially successful. The greatest success is as a result of careful control of details of welding and treatment and the use of fine-grained tube metal, not applied in too thick a layer. One of the hard metal manufacturers suggests a change in the form of the cutting end of the bit from the "chisel" to the "hell diver" type.

Flame Hardening in the Manufacture of Drilling Equipment

By MICHAEL O'Hara,
Production Manager,
International Derrick & Equipment Co., Beaumont, Texas.

The requirements of the oil well drilling companies in the line of machinery have advanced from the crudest and most simple types of equipment in use twenty years ago to the present time, when the drillers are demanding and getting precision machines capable of handling any desired depth of hole. Sprockets and chain are very important parts of drilling equipment.

The replacement of worn-out chain is a very costly item, and until a few years ago was considered a necessary evil. With accurately made sprockets and chain, the replacement costs were really cut, and it was thought that perfection had been reached. It is the practice of chain manufacturers to harden and grind the rollers of their chain.

All steel sprockets used in our equipment are cast from SAE-3135 chrome nickel steel. During the early stages of applying flame hardening to sprocket teeth, the heat was applied with an ordinary heating torch, and when the steel showed a red penetration of one-eighth inch or more in the face of the tooth, that tooth was submerged in water and the heat then applied to the next tooth. It required from four to six minutes for each face of each tooth. The cost of labor and gas was too high for the quality and hardness resulting.

It was decided to adapt a special flame cutting machine, already installed in our plant, to this new duty. The only additional equipment necessary to convert this oxy-acetylene cutting machine to a hardening machine was a flame hardening torch with two adjustable tips. The tips are designed to heat the two wearing sides of a tooth simultaneously. This torch was mounted on the arms of the machine in such a manner as to permit adjustment in a vertical plane.

This machine has a magnetic roller with a variable speed motor to control its movement along any steel surface. The speed of travel of the tips is controlled by this variable speed motor.

The sprockets of a like number of teeth and pitch diameter are completely machined and are then mounted and keyed on a mandrel which is fitted with an inclining head so designed as to permit the sprockets to rotate with the mandrel one tooth at a time.

The operator, having his tips lit in proper alignment with the first tooth and adjusted for height from the surface of the tooth and water flowing at the proper pressure, next snaps on his magnetic roller and starts his travel motor which has been set to the proper speed of feed. The flame travels across the tooth of the first sprocket, and the magnetic roller runs onto the fibre strip in the feed bar. The operator manually moves the roller forward to the next steel insert in the feed bar, the magnetic roller makes contact, and the feed drops to a proper speed. The next tooth in line is hardened and the operation of changing the speed of feed is repeated until all teeth in line have been hardened.

With this method of hardening on the above described type of steel used, it is possible to hold the Brinell hardness between 500 and 550, on a production basis at a very reasonable cost. While the operation described above is done entirely on SAE. 3135 steel, I do not mean to leave the impression that flame hardening is confined to this particular type of steel.

Oxy-Acetylene Shape-Cutting of Oil Field Equipment Parts

By L. W. STAHL,
Plant Manager and Chief Engineer,
Emsco Derrick & Equipment Co.,
Houston, Texas.

Steel fabrication is called upon to play an important role in the manufacture of oil field equipment, and such fabrication employs welding and gas cutting on a wide scale. To keep abreast of the times we must constantly press our research and engineering departments in the search for new ideas and methods of manufacture.

The matter of light weight is probably more important to operators on foreign work or in remote locations than is that of first cost. The latter is of course favored by welded design. We naturally find that there is always a point where fabrication must stop and the use of castings begin. This means then that we must frequently join fabricated members to steel castings through the medium of welding.

It must be borne in mind that as fabricated construction and the use of machine torch cutting are applied to manufacture it is imperative that the equipment being manufactured must be designed with particular attention to and knowledge of the shop problems attendant thereto.

The particular applications we make of oxy-acetylene machine cutting include (1) pumping unit cranks, (2) pumping unit gear case and its side wall construction, (3) pumping unit beam hanger and horsehead, (4) slush pump side wall plates, (5) renewable sprocket rims, and (6) miscellaneous parts.

Flame Cutting with Small Machines

By WALTER B. VAN WART,
Vice President, Wyatt Metal & Boiler Works, Dallas, Texas.

When it was discovered that steel could be cut with a stream of oxygen, there was set off a train of developments which ultimately enabled industry to do things with steel never before believed possible. As the art of both acetylene and electric welding progressed, the ingenuity of the welding engineers were given a test to develop a portable tool for cutting and shaping steel. The first form of development for cutting was an ordinary blowpipe or cutting torch. From this was developed a machine where the blowpipe was fastened in a frame and directed manually to cutting different shapes. Later on the oxy-acetylene equipment industry developed a stationary type of cutting machine operated and directed by an electric motor through a speed reducer. This type of machine had its limitations, as very often it was not convenient to get the work to the machine, and because of this a portable type of cutting machine was developed that could be moved to the work.

A small gas cutting machine consists of either one of two blowpipes held by some sort of supporting frame on wheels driven by a variable speed motor through a gear reduction unit to a grooved or knurled drive wheel.

A modern small cutting machine is able to handle such widely varied work as straight line cutting, beveling and inside and outside circle cutting. Some machines are designed to include shape cutting along with these other applications, thus making a truly universal machine.

WEEK'S DRILLING HIGHLIGHTS

Michigan

Enough free oil in Sylvania sandstone at 3590-95 feet to justify a production test was the highlight of operations in Michigan last week—discovery of two shallow pools was commonplace, the Sylvania test being rated deep. And it is the first indication of commercial oil from this formation in the state.

Illinois

Illinois' most closely watched wildcat, in Gallatin County, proved disappointing when salt water showed in the McClosky. A mile east extension of the Cypress field is indicated.

Kentucky

Two Daviess County wildcats proved dry in the McClosky, and a Hopkins County test will plug back from the Devonian to test four upper showings.

Indiana

Attention was focused on the two-well Gibson County field, as two additional tests neared the producing McClosky horizon.

Southwest Texas

Discovery of oil production in the Bird Islands distillate field of Kleberg County was apparent in a 3500-foot northwest extension test. A wildcat one mile east of East Alice field was cleaning into pits. The La Rosa field, Refugio County, was receiving a new producing horizon, and was defined to the southwest. Completion of discovery well of oil production on downthrown side of Samfordyce fault, Hidalgo County, was being hampered by high gas/oil ratio.

Kansas

Completion of a major extension to the Leesburgh field, Stafford County, delayed by coring and deeper drilling program. A connection of the Cramm and North Cramm fields, Rice County, continues to look favorable. An extension to the Wherry field, Rice County, made 208 barrels. A Barton County wildcat continues to test Arbuckle lime showing.

South Louisiana

A second field for St. James Parish was indicated by a drill-stem test made at 10,376-92 feet, but the well was deepening. A new sand looms for the Golden Meadows field, Lafourche Parish at only 2636-64 feet.

East Texas

The quarterly survey of the Texas Railroad Commission of water production and lifting status of the wells in the East Texas fields shows slight change in January as against the previous report. Tabulation of what this survey showed is presented on page 72.

North Louisiana

The sixth completion in the Bodcaw sand at Cotton Valley had a flow of 751 barrels in 12 hours, to make it the best well for that formation. Cotton Valley is still further in the news with plans for starting a recycling experiment immediately.

Oklahoma

A flowing well from Cromwell sand, a mile north of the old Searight pool, Seminole County, topped off field development in Oklahoma last week. It will add to the revival of drilling in the Greater Seminole area.

West Texas

Flow of 125 barrels of oil from lower Pennsylvanian was obtained in a well on the Swenson ranch in northeastern Garza County after the water flow which drowned it out at the time of discovery last December was reduced to only 40 barrels daily. This well has developed interest, having drilled into granite at 8104 feet. Present flow is from perforations at 7327-34 feet.

Texas Coast

First new field of the year for the upper Texas Gulf Coast is indicated by performance of a wildcat at Port Boliver. Satsuma field got a major extension and Fairbanks has good indications of going wider.

Comparison of Permits Granted for New Wells

STATE	Week Ending Mar. 11	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas	5	12	43	48	247
California	19	35	194	255	1,146
Louisiana	12	22	216	266	1,214
Kansas	20	35	232	344	1,453
Michigan	24	45	191	115	953
Oklahoma	26	75	370	407	1,978
Texas	268	461	2,017	2,741	12,369
Total	374	685	3,263	4,176	19,360

Summary of Wells Completed in the United States Week Ending March 11, 1939

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1939	Total this Date 1938
Alabama	....	....	....	....	.....	1	.....
Arkansas	....	....	....	....	.....	51	44
California	20	18	....	2	13,269	201	222
Colorado	1	....	....	1	.....	5	3
Florida	....	....	....	....	.....	....	.....
Illinois	45	35	....	10	10,524	767	149
Indiana	....	....	....	....	.....	23	14
Kansas	18	13	....	5	10,353	244	405
Kentucky	8	5	....	3	228	139	142
Louisiana	11	7	....	4	3,614	179	230
Michigan	25	14	....	11	3,780	230	168
Mississippi	....	....	....	....	.....	1	5
Montana	3	2	....	1	475	23	7
Nebraska	....	....	....	....	.....	....	.....
New Mexico	12	11	....	1	2,215	130	101
New York	6*	6*	....	....	25	95*	157*
Ohio	12*	4*	4	4	15	169	209
Oklahoma	42	26	4	12	8,500	370	437
Pennsylvania	22*	17*	4	1	18	238*	504*
Texas	219	150	4	65	135,519	2,007	2,602
Utah	....	....	....	....	.....	....	.....
West Virginia	13	2	8	3	12	105	188
Wyoming	4	3	....	1	590	40	16
Total this week	461	313	24	124	189,137	5,018	5,603
Total last week	405	288	23	92	179,769	4,557	5,112
Total this year	5,018	3,437	347	1,234	.....	....	.....

* Includes water-input wells.

Oklahoma Fields

Searight extension flow further revives Seminole area. Sac and Fox pool due for steady development program.

Tulsa.—Another spot in the Greater Seminole area gave promise of a drilling revival last week when a well a mile north of the Searight pool flowed 1561 barrels in 18 hours from the Cromwell sand. The flow was made March 9, a week after the well began showing. It is Lachman 1, C N½ SE NE 34-10n-6e, drilled by H. S. Moss.

It was carried to the Wilcox sand, at 4625 feet. A core between 4627 and 4630 feet showed water. After plugging back to 4264 feet, perforations were made between 3812 and 3830 feet. Testing was delayed while tanks were erected and tubing run. The 18-hour flow would indicate output of 2000 barrels daily through 1-inch tubing choke.

Because the Searight pool did not have a saturated Cromwell section, it is not likely that the completion will result in a general working over within the field. Searight was the second of the fields to be discovered in the Seminole development and had its first production in July, 1926. It is small in area, now having 65 wells. Production was found first in the Hunton lime and later in the Wilcox sand.

The Cromwell sand is not a prolific source of oil in Oklahoma. It is a member of the basal Pennsylvanian group and got its name from the Cromwell field, eastern Seminole County, a discovery of 1923, and developed the next year. In the Wewoka field, Seminole County and the first discovery of the county, the formation produces and is known as the Smith sand.

Present estimate of the discovery is that it is a small structure of Cromwell sand production.

Hunton lime production at St. Louis, Pottawatomie County, was moved northward by Wood Oil Company's Peters 1, SW SE NW 28-8n-4e, which flowed 70 barrels of oil and 28 barrels of water in 24 hours after perforations in the lime between 2087 and 4155 feet.

This field in the Greater Seminole area still leads the state in drilling wells. Part of the work is in extensions and part of it is from plugging back to test formations above the Wilcox sand.

The Fitts pool, Pontotoc County, contributed a large well 2179 barrels in 24 hours from Hunton lime. Simpson Fell Oil Company drilled Bates 1-B, NEc SW 26-2n-7e, to 3791 feet in Hunton lime.

An area due for steady development in Oklahoma for the remainder of 1939 is the Sac and Fox pool, Lincoln County. Although it had its first well in 1924 it did not come into real development until 1937. The current drilling campaign which promises to see it completely drilled came after leases were sold on state school land tracts in 1938.

The field now has 105 producing wells from Prue sand, found around 2900 feet. There are six wells drilling. Dry holes around the field are too far removed to permit exact calculation of its final limits. There is room for another 50 wells within what looks safe as its limits and it is possible that it may have close to 200 wells when finally developed, an area of 2000 acres, as it is being drilled on 10-acre spacing.

H. F. Wilcox Oil & Gas Company completed the first well in 1924 and drilled two more wells that year on leases from the Sac and Fox agency. Two wells were completed the next year and three in 1926. It was 1934 before more drilling came. This concern carried on all development on the Indian lands until October 1937 when school land leases brought Helmerich & Payne, Inc., Coralena Oil Company, Mudge Oil Company and the Cooper Drilling Company into lease ownership.

There are still three 80-acre leases to be offered by the state on school land.

Both steam and internal combustion engine rigs are used in drilling and wells are completed within two weeks. Hard formation bits are used to the top of the Oswego lime, a thin hard section just above the producing formation where the oil string is landed. Drilling in is done with portable cable tool equipment. All wells are shot and 180 quarts is the average amount of explosive.

The surface casing string, 10¾-inch O.D. 40-pound casing is landed around 200 feet in 13-inch hole. A hole 8¾ inches in diameter is carried to the Oswego lime and 6-inch oil string landed.

Wells flow after cleaning out. Most wells are equipped with 2-inch tubing and packer.

The sand thickness is from 70 to 100 feet with a few shale breaks. Average thickness is 80 feet.

The oil averages 45 gravity. Daily output is held to around 3000 barrels for the 105 producing wells.

A second test for the Calvin pool, Viola lime production, Hughes County, is to be drilled by Phillips Petroleum, Shemwell 1, C SE NW 8-5n-10e, north of the discovery well. The location is the first to follow a 40-acre spacing order granted February 7 by the Oklahoma Corporation Commission.

The one producing well, Beeker 1, NWc SW 8-5n-10e, was drilled to Wilcox sand at 6286 feet and found dry. It was plugged back and got oil and water from Viola lime between 5618 and 5675 feet. First production came March 20, 1938. Since that time it has been producing with submersible pump and considerable experimentation has been made.

Although the Viola lime section averages close to 60 feet, its combined saturated thickness is not calculated to be more than 20 feet.

Last week a location was made a half mile north of present production in the North Extension of the Grayson pool, Seminole County. Rogers and Rogers will drill Cosat 1, SW NE NE 12-6n-5e. Sunray Oil Company began swabbing oil from Milsap 1, NW SW SW 7-6n-6e, in the pool proper, the oil coming from the Simpson dolomite, total depth 3800 feet. The field has 4 drilling wells.

Two wells are nearing completion in the Coyle pool, Payne County. Texas Company has set pipe at 4850 feet in Viola lime in Minnich 2, C E½ SE NE 11-17n-1e. Magnolia Petroleum Company is rigging standard tools to drill in Cain 1, C S½ NW SW 12-17n-1e, with pipe set at 4827 feet. Top of the Viola lime was at 4799 feet.

Three drilling wells in the Ramsey pool are under way two of them outside of the Community block, on which Mid-Continent Petroleum Corporation has completed 20 producers. One producing well has been completed east of the unit.

In Garfield County, the wildcat test of

Oklahoma Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo—		
Stephens, Waggoner 1, se se nw nw 3-5n-9w	¶	....
Magnolia, Paul-Kune 6, se ne ne 10-5n-9w (OTD 2400 ft)	3600	3405
Cherokee—		
Heydrick, Kenedy 1, sw sw se se 8-15n-22e	*	723
Petroleum Grubstakers, Cookson 1, se sw nw nw 33-15n-22e	*	350
Comanche—		
Dinsmore, School Land 1, se se sw ne 20-2n-10w	3	487
Creek—		
Shibley Oil Co., Mike 1, nwc 8-16n-10e	*	2308
Central Commercial, Ricks 1-A, ne se se 16-17n-9e	50	2460
Crosbie, Escoe 12, swc 26-18n-8e	90	2609
Garfield—		
Champlin, Makey 1, nwc se 4-24n-8w	63	6697
Jackson—		
Fish et al's Mattie 2, ne nw sw 5-1s-19w	71	2567
Lincoln—		
Wilcox O&G, De Lozier 16, swc 10-14n-6e	188	3020
Sac & Fox 23, sec 16-14n-6e	60	3095
Helmerich & Payne, Humphrey 1, nec sw 27-16n-1e (otd 5318 ft)	¶32.6	4950
Murray—		
Comet, Tarby 1, c nw ne 17-1n-2e	*	2508
Okfuskee—		
I.T.I.O. Co., Palmer 1, ne se nw 5-16n-9e	*	1904
Oklahoma—		
Clark & Co., Tisby 1, sw ne sw nw 23-12n-3w	160	6488
Harding 1, nw swc ne 23-12n-3w	*	6580
Highley 1, ne sw nw se 23-12n-3w	270	6614
Okmulgee—		
Newblock, Gill 1, sw nw nw 36-15n-12e	¶3	1649
Pawnee—		
Johnson Refg. Co., Finley 1, sw ne nw 27-20n-9e	490	2081
Pontotoc—		
Sinclair Prairie, McCarty 7, sw se se 15-2n-7e	50	1401
Superior, Norman-Flemming 1, swc 7-5n-5e (pb 2622 ft)	7	2896
Vierson et al's Hatcher 1, nwc 23-5n-5e	*	2573
Texhoma, Ray 1, swc nw 34-5n-6e	*	1285
Barber, Mount 5, sw ne nw nw 36-5n-7e	75	2265
Pottawatomie—		
Burns, Dean 1, ne se se 13-6n-3e	*	3443
Denver P & R, Richards 2, cwl sec ne 2-6n-4e	475	4220
Giblin et al's Walker 1-A, ne se sw 7-7n-4e	30	3940
Helmerich & Payne, Willis 3, nw sw se 7-7n-4e	187	3859
Gulf, Johnson 3, sec nw 29-7n-5e	268	4130
Taber et al, Miller 1, sec 29-7n-5e	175	4135
Helmerich & Payne, Billington 2, sw se sw 31-7n-5e	666	4250
Smith, Wood 2, nwc sw 31-7n-5e	377	4386
Tarter 2, ne nw sw 32-7n-5e	200	4021
Trigg, Canfield 2, ne nw sw 33-7n-5e	700	4236
Seminole—		
Vierson, Harrill 1, swc 15-5n-5e	*	51
Hall et al, Dameron 1, nwc sw 3-6n-6e	80	2862
Smith, Killingworth "B" 1, nwc se 28-7n-6e	65	2318
Commercial, Wright 1-A, nw sw se 32-7n-6e	*	3279
Stephens—		
Empire, Surber 25, se sec sw 33-1s-8w (otd 2258 ft)	100	2268
Tulsa—		
Central Commercial, Kirk 1A, sw swc ne 13-16n-12e	*	2298
Sandorf, Self 1-A, nwc sw 36 17n-12e	¶0.6	758
Whitten, Taylor 2, se se ne se 24-19n-11e	¶1	1449

* Failures; † Junked; ¶ Million cu. ft. gas.

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ATLAS EXPLOSIVES

CHEMICALS ATLAS EXPLOSIVES

Champlin Refining Company, Allen 1, SEc 26-24n-8w, four miles south of the Hillsdale fields, is drilling below 6700 feet in Mississippi lime.

The Garfield County wildcat southwest of the old Garber field will get under way shortly as Continental Oil Company is building derrick for Luedeman 1, C SW NE 2-21n-4w. This test is near the field and will seek production in the Wilcox sand.

A showing in the Cleveland County wildcat of Nels Burton, Norman 1, NWc NE 17-9n-2w, evidently from Hunton lime, resulted in use of a submersible pump for a test last week. Later the pump was removed and the formation will be treated with acid. This well was drilled to Wilcox sand, total depth 7695 feet a year ago. Present owner took it over, plugged back and perforated between 7540 and 7550 feet. An effort to swab resulted in a long fishing job. On its first pumping test it made 280 barrels of fluid, half of it oil.

Kansas Field Developments

Wherry field extension does 208 barrels.

Barton County wildcat continues to test.

Wichita.—Completion of a major extension for the two-well Leesburgh pool, Stafford County, has been delayed by a program of coring and drilling deeper. Here Continental Oil Company has had a hole full of oil without acid treatment in Russell 1, SWc NE 13-25-13w, a mile south of the discovery well.

Also in the near completion class is the McPherson County wildcat, north of the Chindberg pool, where Mar-Lyn Company has been pumping around 15 barrels daily from chat, total depth 3010 feet, in Dixon 1, NE NE NW 7-19-2w. Another test making oil but not completion is in Barton County, Eveleigh 1, SWc NE 3-18-14, 5 miles southwest of the Hoisington pool. Long and Johnson have had pumping recovery as high as 195 barrels daily from Arbuckle lime, 3338 to 3342 feet.

That Cramm and Cramm North pools, Ellis County, will become one field was indicated by completion March 10 of a well midway between the two. McPherson Drilling Company's Cramm 1, SEc NW 15-19-9w, made potential of 761 barrels from Arbuckle lime at 3208 feet. It is a half-mile from each pool and the territory is not condemned by dry holes.

An extension for the Wherry pool, Rice County, was completed last week by E. J. Shaffer, whose Johnson 1, C E½ W½ 31-20-7w, a fourth of a mile north of production, made 208 barrels from the Chat, total depth 3321 feet.

Testing continued in the Barton County wildcat of Gulf Oil Corporation, Louis 1, C N½ NW SW 2-20-12w, where oil has been showing in the Arbuckle lime total depth 3375 feet for two weeks. The lime would not take the acid load of 3000 gallons. It has been given a small show and has a small amount of oil in the hole.

A gas blowout from Topeka lime in the wildcat of Paul Martin and S. H. Hearing, Feltes 1, NW SW SE 8-16-12w, was killed late last week and the hole will be deepened. The well is a half mile northwest of the Beaver pool but there are dry holes between the two. It blew out and made 12,000,000 cubic feet of gas from 2900 feet.

Three quarters of a mile northwest of the Emmerman pool. Ellis County, Bridgeport Machine Company had a dry hole last week. Its Froelich 1, C W L SW 34-12-6n, was drilled to 3540 feet in Arbuckle lime where it was abandoned.

Kansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Derby Oil Co., Frees 14, se sw ne 3-17s-11w	442	3395
Butler—		
Adair et al, Brandt 7, nec se 15-28s-7e	25	2708
Ellis—		
Darby, Peavey 1"C," nws ne 24-11s-18w (OTD 3439 ft.)	1367	3456
Phillips, Clinton 2, 81 ft s cwl nw ne nw 5-12s-17w	320	3638
Ellsworth—		
Continental, Ploog "A" 3, 100 ft e csl sw nw sw 27-17s-8w	2515	3233
Graham—		
Continental, Drumm 1, sec ne 16-9s-21w	1043	3702
Greenwood—		
Hancock et al, Rousch 1, sw sec nw 8-28s-13e	*	1530
Marion—		
Kaufman, Meyer 1, ne nw ne 27-17s-4e	*	2718
Vickers, Sutphin 1, sw se sw 30-22s-4e	*	2643
McPherson—		
Shell, Meyers "A" 1, c ne ne 14-19s-2w (otd 2939 ft)	305	2949
Cling et al, Magnusson 1, nwc 25-19s-3w	*	3016
Rice—		
Continental, Myers 5, 240 ft e sw se sw 30-18s-7w	1431	3202
Russell—		
Hinkle et al, Krug 1, sec sw 8-14s-14w	*	3327
Shields, Gross 1, c sw se 5-15s-13w (Pb 2895 ft)	603	2976
Western Kansas O. & Refg., Maag 1, sec sw 7-15s-13w	441	3092
Sinclair-Prairie, Sellens 1, swc 15-15s-13w	1122	3334
Stafford—		
Stanolind, Hartnett 8, csl se nw nw 13-24s-11w	586	3778
Stanolind et al, Ferris 7, nwc 23-24s-11w	153	3810

*Failures; †Junked; ‡Million cu. ft. gas.

Drilling started on first test in Missouri campaign

St. Joseph.—Missouri and the Forest City Basin came into the list of active oil areas March 7 when drilling started on the Fred Spring farm, SWc SE 30-2n-38w, a mile north of Mound City, Holt County. The first drilling well in Missouri part of the nation's most active leasing play is being drilled by J. H. Everitt of Oklahoma City. He has a block of 6700 acres.

M. J. Lewis of Houston has the contract for 3000 feet. This depth is calculated to reach the St. Peter sand, identical with the Wilcox sand in Oklahoma.

Last week also brought a Clay County location for Missouri by Frank Hopper of Hutchinson, Kansas. It is Black 1, NWc 36-52n-32w, near Liberty.

The derrick of H. V. Elwell, Taylor 1, C EL NW 12-62n-32w, east of Milan, Sullivan County, completes the development picture in Missouri. This derrick was erected in October, 1938. The test is slated to be drilled by North Missouri Oil Development Company, which is being promoted here. Its program calls for the drilling of two wells on leases assembled by Elwell of Wichita, Kansas, one of the first individuals to come into Missouri and assemble leases.

A location announced in February by C. E. Richardson is Jones 1, C NW NW 16-58n-17w, Macon County. This, however, has not gained listing on the brief Missouri drilling report now appearing in the files of the oil industry.

Texas sues to recover Crane-Ector oil lands

Suit has been filed by Attorney General Gerald Mann to recover 2,652 acres of land in Crane and Ector counties. The tract was sold last December 29, to R. L. York. It includes properties producing oil and gas which had been leased to operators by the University. This was one of the "last minute" sales by former Land Commissioner W. H. McDonald, and the property went for $3.00 an acre.

The tract has had a long history as a possible vacancy area, and York first filed in 1928; however, Land Commissioner Walker, who was in office at that time, declined to approve the application.

Attorney General Mann, in his suit, bases the State's claim on the contentions listed below:

"1. The application by York to purchase filed on December 29, 1938, is void for the reason that it was upon the express condition of a reservation of 1/8th of the sulphur and 1/16th of all other minerals, whereas, under the law in effect at the time of the filing of the original letter of inquiry by York, it was necessary for the application to state that the purchase was on the condition of the reservation of all the minerals to the state.

"2. The sale to York was void for the reason that it was based upon a void application, and furthermore, that the award itself fails to reserve all the minerals to the state as required by law.

"3. The land was, without dispute, owned by the State of Texas and the only question is whether it belongs to the University Fund or the Public School Fund. Under such circumstances, it is contended that the statute under which York filed for a preferential right to purchase the land had no application.

"4. The final judgments of the courts in the case of York v. Alley, 25 S. W. (2d) 193, are res adjudicate of the right of York to purchase the land and in effect decreed that he had no right to purchase.

"5. The price of $3.00 per acre charged by the Land Commissioner was 'so grossly inadequate as to shock the consciences of reasonable minded persons and constitutes an act of fraud upon the state.'"

Illinois Developments

Gallatin County wildcat gets salt water.
Mile east extension indicated for Cypress field.

Oney, Ill.—Illinois' most closely watched wildcat of the past month, Coates & Fields' Green 1, SW SW SW 16-9s-9e, Gold Hill Township, Gallatin County, 30 miles from production, proved a disappointment when salt water broke through during swabbing operations in a test of the McClosky lime below 2600 feet. Plans to dump more acid in the hole were abandoned.

The test will be carried to the St. Louis lime, and if production is not obtained in that formation, it may be continued to the Devonian at about 3600 feet. Failure to obtain satisfactory production in the lower formations will bring plugging back to the Waltersburg sand at 1750 feet where 36 feet of saturation were cored. With an elevation of 364 feet, the wildcat topped the Chester series at 1330 feet, the Menard at 1672 feet, Waltersburg at 1750 feet. Cypress at 2200 feet, Golconda at 2070 feet, St. Genevieve at 2448 feet, Ohare at 2526 feet, Rosiclare at 2545 feet, Fredonia at 2571 feet, and McClosky at 2600 feet. Bottom was at 2668 feet, and the hole will be continued with cable tools.

Flood waters of the Wabash River covered the platform at Longhorn Oil Company's Mrs. J. M. Helm 1, SW SW NW 15-3s-14w, Compton Township, Wabash County, extreme southeastern Illinois, and threatened several other tests in the vicinity. In the short period the Helm 1 was active since flood waters covered the location in late February, a Benoist core was taken below 2731 feet which was reported tight but possibly capable of making a small well. When drilling operations can be resumed, the wildcat will be deepened to the McClosky. It is 4 miles west of the Cooper McClosky lime pool opener in Gibson County, Indiana.

A mile east extension to the Cypress sand pool five miles northwest of here was indicated when Dyson & Anderson's Ed Wheeler 1, Section 24-4n-9e, cored 14 feet of saturation. Casing was set to 2560 feet, and the hole was bottomed at 2574 feet. Three other tests were preparing to complete in this pool, all by Pure Oil Company. The Howard Cazel 5, Section 23-4n-9e, was being completed in the Cypress at 2632 feet, while the No. 4 on this lease was waiting on cement with casing set to the top of the McClosky. It was bottomed at 3015 feet. The F. Wakefield 8, Section 26-4n-9e, also had casing set to the McClosky, with bottom at 3010 feet.

The Texas Company's Zina Piper 1, Section 22-4n-9e, in the North Olney pool, was forced to shut down at 2100 feet when one leg of the derrick settled into the earth. The only active well in this pool was Chas. Skinner et al's Sylvan Iris School 1, Section 23-4n-10e, drilling at 2400 feet. Ohio Oil Company's J. Fleming 1, Section 15-4n-10e, had derrick on the ground, and Wolfe & Andrew's A. E. Wattleworth 1, Section 26-4n-10e, was a location.

Ground conditions continued to make movement of equipment difficult, and in some areas impossible. There was no improvement in sight as snow, thaws and rain continued to predominate the weather picture. One operator reportedly spent $1200 to move a rig and other drilling materials a mile to a location in the Lake Centralia-Salem field of Marion County.

Continuing to command attention in the Lake Centralia-Salem field were two deep Devonian tests. Kingwood Oil Company and Gulf Refining Company's Burge 1, NE NE SE 18-1n-2e, was drilling below 3000 feet with the Devonian expected at 3300 or 3400 feet. This test overtook and passed W. S. Tatum's English 7, SW 8-1n-2e, which continued to have difficulty holding circulation because of a spongy lime formation at about 2700 feet. The hole was nearing the 2800-foot level.

Production in the Devonian in the Lake Centralia-Salem pool, now ranking as one of the most prolific in the Illinois basin with production being taken from the Benoist sand and McClosky lime, would precipitate a drilling campaign in that Marion County area even more intensive than that of the past summer and fall months.

After drilling to 3165 feet, Palaciene Oil Company's Inland Steel Co. 1, wildcat in C SE NE 29-4s-2e, Jefferson County, plugged back to the McClosky at 2874 feet but chances of making a well were reported slight. It was bailing, but only sulphur water was being recovered.

In Clay County, Duncan et al's Liggett 1, SE NW SE 17-5n-5e, Larkinsburg Township, which was a failure in the Benoist several weeks ago, had casing set to a promising Aux Vase saturation at 2380 feet.

Material was being moved in for a second wildcat test in Sangamon County, while plans were being made to continue drilling the first test which had previously been reported abandoned. Morris et al's (A. C. Leathers) H. Workman 1, 2 miles south of Curran and 1¾ miles southeast of Morris et al's (Williams & Wittlinger's) King 1, first test to be undertaken in this county during the current development campaign, was moving in rotary equipment. Thomas Beatty, Centralia, has been awarded the drilling contract. Meanwhile, the first test was to be continued beyond its previous abandoned depth of 2257 feet to the St. Peter, corresponding to Oklahoma's Wilcox sand. Sangamon County, on the north edge of the Illinois basin area, includes the state's capitol city of Springfield.

In Montgomery County, also in the northern section of the basin, Swords & McDongal's Brewner 1, C NE NE SW 16-10n-1w, Audubon Township, a wildcat that has been standing idle at 1050 feet for several months, resumed last week, while in Macoupin County, W. G. Dillen et al's Keele 1, SE SE NE 32-10n-9w, Western Mound Township, resumed from 675 feet and at last report was at 1050 feet. The latter test is near Chesterfield.

Expected confirmation of the Mattoon pool of Coles County was not realized last week as Wheeles & Whisenant's Michael 2, SW NW 1-11n-7e, found the Weiler sand dry. The No. 1 on this lease, drilled by the same operators, opened the pool with a very light Weiler sand producer. The No.

Illinois Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Schlafly & Dameron, Nash 3	125	2977
Cumberland County—		
Jarvis Bros., Wilson Estate 1	*	2326
Fayette County—		
Carter, Albert McClain 3	114	1591
N. M. Hopper 5	480	1568
N. M. Hopper 6	696	1574
N. M. Hopper 7	168	1517
Jean Ramsey 1	120	1575
Frank Quade 3	296	1485
H. S. Williams 4	92	1518
Mary Welker 1	239	1528
Frank McClain 1	846	1579
Iva Miller 1	136	1607
A. Watson 3	328	1529
Kingwood & Duncan, Yolton 11	152	1532
W. C. McBride, Inc., Logue 4	500	1529
Union Products Co., Arnold 4	75	1440
Minerva Oil Co., Morris 2	150	1585
Jarvis Bros., Welker 1B	180	1549
Texas Oil Co., O. Kepner 1	125	1560
N. Wantland 1	116	1583
Oil, Inc., Blurton 4	200	1460
Blurton 5	150	1460
Magnolia, Rhodes 6	48	1601
Fulton County—		
Ind. Prod. & Ref., Bernhard 1	*	755
Lawrence County—		
R. E. Lonergan, Fisher & Tewault 1	*	1125
Madison County—		
Harry Hazelest, Wetzel 1	*	1916
Marion County—		
Texas Co., Hawthorne 2	252	1977
O. Johnson 6	287	1784
V. Kalkbrenner 6	196	1792
V. Kalkbrenner 8	210	1788
W. Friedrich 2B	250	1854
A. Shanafelt 1	240	2108
Frontier O&G Co., School Tract 1	120	2070
Rockhill Oil Co., Foster 11	680	2034
Tatum, English 6	450	2034
Ohio, Mathew Young Heirs 9	95	1880
Harry Blackstock, M. & I. R. R. 6	1000	2021
Kingwood & Bell, Shanafelt 9A	1369	2040
Montgomery County—		
W. O. Allen (Mott Drilling Co.), Ward 1	*	2307
Sangamon County—		
Morris et al, King 1	*	2257
Shelby County—		
Joe Ayleward, E. E. Bickford 1	*	1956
Washington County—		
Smith, Geo. Marquard 1	*	1026
Taylor Dr. Co. (Hutchins), Weihe 1	*	1625
Pitfer, Hafer 1	*	763
Wayne County—		
Texas Co., J. C. Woodham 1	39	3353

* Failures; † Junked; ¶ Million cu. ft. gas.

Ohio Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Coshocton County—		
Rutledge & Mosholder, Rine 1	*	3040
Knox County—		
Perkins, Ryan 1	*	2620
Licking County—		
Wiley H. Van Wey 1	¶6.00	2540
Stricker et al, Murphy 2	¶.03	770
Morgan County—		
Pure Oil Co., Hughes 1	I	1183
Hughes 10	I	1183
Muskingum County—		
Gas Prod. Co. of Ohio, Rutledge 1	*	4425
Perry County—		
Atha Co., Wilkins 1	10	2979
Summit County—		
Pawnee Corp., County 4	*	4134
Washington County—		
Witago Oil Co., Temley 1	5	1360
Hope Const. & Ref. Co., Greenless 2	¶.20	1517
Wayne County—		
Ohio F. G. Co., Yost 1	¶.25	3176

"I" indicates intake wells.

*Failures; †Junked; ¶Million cu. ft. gas.

2 may be deepened to the Devonian.

Leggett Drilling Company's Matilda Hon 1, NW SE 32-3s-11e, Phillips Township, White County, was preparing to spud in. A. C. Thomas, Gene Shirley and Judge Blodgett Priest are among independent operators interested in the wildcat.

Leathers, Rockwood et al's Amos Yonaka 1, NW SE SW 22-2n-14w, Bonpas Township, southern Richland County's first test, was still idle at 2750 feet because of inability to move supplies to location. The wildcat had recovered a Cypress sand oil show, but will be continued to the McClosky.

Kentucky Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Butler County—		
Evans & Patrick, Harrison 3	10	386
Daviess County—		
General Drilling Co., Taylor 3	*	1770
Mocarz Oil Co., L. Whitely 1	*	1640
Henderson County—		
Sun and Kentucky Nat. Gas Co., Algood 1	200	....
Lee County—		
Lemon et al, Bush 1	5	....
McLean County—		
Daly et al, D. & S. Buterfield 6	*	1175
Ohio County—		
Coffey & Huff, Demmers 1	10	520
Powell County—		
Knox & Brown, Rogers 4	3	....

* Failures; † Junked; ¶ Million cu. ft. gas.

West Virginia Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pittsburgh & W. Va. Gas Co., Sirkey 7661	¶.34	1856
Gilmer County—		
Kidd & Marsh, Glennville State Teachers 1	¶1.25	1725
Kanawha County—		
United F. G. Co., Fisher 4818	¶11.50	4873
Marion County—		
Monroe & Co., Watson 1	¶.03	3140
Pleasants County—		
Powell Farm Oil Co., Powell 2	10	1925
Ball, Fleming 1	¶.25	1978
Ritchie County—		
Lemon, Morton 1	¶.25	1950
Heneghan & Hanlon, Arnott 3	*	....
Mole Hill O&G Co., Bradford 2	2	1067
Wayne County—		
Chartiers Oil Co., Jackson 1	*	4167
Kentucky-W. Va. Gas Corp., Ferguson W-56	*	2960
Wetzel County—		
Null & Moorhead, Hostutler 3	¶.18	3450
Lamp, Butler Lot 1	¶.10	540

* Failures; † Junked; ¶ Million cu. ft. gas.

Pennsylvania Completions
BRADFORD DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Cole Creek Oil Co., Vincent	1	....
J. P. Kervin, Fee	*	....
L. L. Slingerland, Fee	¼	....
D. E. Quinlan Estate, Fee	5	....
Forest Petroleum Corp.	1	....
Niagara Oil Corp., 2 wells	2	....
Bradford Transit Co., 7 wells	7	....
Bradford: Water Intake Wells		
Andrus & McDowell, 218-296 Bing.	...	....
Niagara Oil Corp., 2 wells	...	....
Forest Oil Corp.	...	....
Butler-Armstrong District		
E. H. Hutchison, J. Eichert	¶	....
Middle District		
Morck Oil Co., J. H. Morrison	¶	....
Clinger Oil & Gas Co., Haight	½	....
New York-Pennsylvania: Gas Field		
New York State Natural Gas Co., S. Hammond	¶	....
F. Boyd	¶	....

* Failures; † Junked; ¶ Million cu. ft. gas.

New York Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Messer Oil Corp., Wilson-Reynolds farm, Bolivar	6	1467
Forest Oil Co., Ackerman farm, Bolivar	8	1455
Budd Oil Co., Anderson-Otis farm, Alma	5	1382
Almy & Pierce, Owens farm, Bolivar	6	1365
Allegany: Water (Pressure) Wells		
Forest Oil Co., Ackerman farm, Bolivar	..	1429
Ebenezer Oil Co., Emerson farm, Scio	..	1029

* Failures; † Junked; ¶ Million cu. ft. gas.

Kentucky Fields

Two McClosky wildcat failures in Daviess County. New exploratory tests are to be drilled.

Owensboro, Ky.—Two Daviess County dry holes in the McClosky lime formation clouded Kentucky developments during the past week as flood waters threatened to erase what little improvement had been made in field conditions since the flood stage of February. One of the tests is being deepened to the Devonian.

Mocarz Oil Company's L. Whitely 1, 3½ miles southeast of here, topped the McClosky at 1635 feet and was abandoned 5 feet lower. The structure was about 60 feet high and, while a good porosity was reported, it did not make a well.

Sulphur water drowned out Fred T. Hildt and Sunflower Oil & Gas Company's Don Moore 1, 3 miles east of here, when plugs were drilled to the McClosky at 1638 feet. The hole was being deepened below 1650 feet, operators planning to go through the Mississippian series to the Devonian, expected between 3000 and 3200 feet.

Snowden & McSweeney, Cumberland Oil Company and J. J. Minton will start a wildcat test this month on the Bailey Witsell farm, 4 miles northeast of Madisonville, Hopkins County, to be carried to the McClosky at about 2800 feet. Several possible pay sands will be explored on the way to the lime. J. L. Tomberlin and W. F. Lacy are the drilling contractors.

In this county, Gulf Refining Company's L. W. Schmetzer (Simon Clements) 1, 7 miles southwest of Madisonville, stopped drilling in the Devonian at 4586 feet. While a well could not be made in that formation, operators were plugging back to test four showings encountered at 720 feet, 1600 feet, 1800 feet and 2000 feet. Hobbs, Campbell & Hunsaker's Baker 1, 5 miles west of Madisonville, recovered lost tools and resumed drilling below 2000 feet.

Magnolia Petroleum Company's J. E. Casey 1, near Spottsville, first Devonian test in Henderson County, was being closely watched as it penetrated that formation, topped at 3995 feet. The drill was at 4250 feet at last report. Operators hoped for a strike within the next 100 feet.

Phillips Petroleum Company was moving in equipment for C. A. Montgomery 1, a mile west of Nuckols, McLean County. Staves Drilling Company, Owensboro, is the contractor.

Fred T. Hildt & Sunflower Oil & Gas Company's Fred Gibson 1, 3 miles northwest of Calhoun, McLean County, was drilling below 2450 feet, 60 feet in the Mississippian series topped at 2390 feet. The McClosky was expected at about 2500 feet. Sunflower Oil & Gas Company's C. Vickers 1, 2½ miles south of Calhoun, was fishing for a lost bit at 745 feet.

When recession of flood water permitted access to the lease, Major Oil Company's West Heirs 1, in the Birk City pool, was found to have several hundred feet of oil in the hole. The well had been declared dry before the water rose last month, but apparently acid had meanwhile softened an unusually hard spot in the McClosky. An effort will be made to complete the well.

Daviess County, which shares the Birk City pool with Henderson County, topped its neighbor in oil production during January, according to tax certifications filed with county clerks last week. Daviess County production totaled 88,415.53 barrels, for which producers were paid $94,367.65, while Henderson County production totaled 74,396.12 barrels for which $78,386.04 was paid.

Of Daviess County production, the Fordsville Gathering Line took 28,480.46 barrels, the Aetna Oil Service Company 28,171.97 barrels, Ohio Oil Company 10,099.38 barrels, Producers Pipe Line Company 17,625.23 barrels, and R. Hal Compton Crude Oil Purchasing Company 4,038.49 barrels. Of Henderson County production, Fordsville Gathering Line took 49,595.77 barrels, Aetna Oil Service Company 13,365.36 barrels, R. Hal Compton Crude Oil Purchasing Company 6,032.14 barrels, and Ohio Oil Company, 5,402.85 barrels.

February production, figures for which will not be known for another month, is expected to show a sharp drop as many wells in the Birk City pool were shut in for an extended period because of flood conditions.

Indiana Fields

Orange County wildcat to test St. Peter formation

Evansville, Ind.—The Gibson County area opened late last year by Allen's Cooper 1 continues the hottest spot in Indiana. Continental Oil Company's J. A. Cooper Sr. Estate 1, near the discovery in Wabash County, appeared to be the third test to reach the McClosky depth as Ray J. Ryan's Wm. & Brizella Dunn 1, NE SE SE 18-3s-13w, 1½ miles southeast of the discovery, was forced to shut down at 2852 feet when the flooded Wabash covered the location. The pool was confirmed a week ago by Hollingsworth & Bander Drilling Company's David M. Cooper Estate 1, which flowed 45 barrels an hour on a 12-hour test from the McClosky, bottomed at 2885 feet.

The Continental company's hole was down below 2600 feet, having passed through a "slight saturation" in 29 feet of Waltersburg sand below 2042 feet. In Section 12-3s-14w with an elevation

of 384 feet the closely watched test topped the Base Bennsylvania at 1837 feet, the Palestine at 1903 feet, Menard at 1945 feet, Waltersburg at 2042 feet, Vienna at 2085 feet, Tar Springs at 2131 feet, Glen Dean at 2248 feet, Hardinsburg at 2285 feet, Golconda at 2327 feet, and Cypress at 2487 feet.

Hollingsworth & Bander Drilling Company's David M. Cooper Estate 2, NE SW 13-3s-14w, offsetting their No. 1 to the east, was drilling at 1600 feet, while a rotary rig for the No.3 has arrived and was to be moved in just as soon as road and backwater conditions permit. Hollingsworth & Bander's lease was threatened by high water, and it was considered doubtful if drilling on the No. 2 could be continued throughout the week.

Jess Tomberlin and W. F. Lacy, of Houston and Shreveport, respectively, will drill the A. C. Thomas 1 on the Cooper Estates land about ½ mile southeast of the discovery. Location is SW SW 18-3s-13w. If the first well indicates good production, four will be drilled on the 40 acre tract.

About a mile southwest of Princeton, also in Gibson County, C. M. Lane was moving in materials for Dr. McCarty 1, NW 13-2s-11w.

A closely watched deep test, scheduled for the St. Peter which is comparable to Oklahoma's Wilcox sand, Yingling & Hays' R. Baker 1, SW SW 29-3n-2w, near West Baden, Orange County, set casing to 2230 feet and was drilling on.

In Spencer County, Frank Damron et al's Audrey W. Haines, NW NE SE 34-7n-6w, Ohio Township, 1½ miles south of Rockport, set casing to the top of the McClosky at 1475 feet and was preparing to drill in. Damron announced location for S. Wright 1, NE 19-6w-7s, 5 miles east of Hatfield and 4½ miles west of Rockport, in this county. Derrick was up and a heavy duty cable rig was on its way from Illinois. In Spencer County, Damron will continue the Cora Niles 1, NE NW NE 2-8s-7w, Luce Township, to the McClosky with a heavy cable rig which is coming from Lawrenceville, Illinois. The test had been idle for more than a month with surface casing set at 275 feet because ground conditions would not permit moving in the heavy outfit.

In Vanderburgh County, Arab Petroleum Company's J. Tieken 1, wildcat in the SE 17-5s-11w, 3 miles southeast of St. Wendel, finally got underway despite unfavorable weather. It was drilling below surface casing, 10-inch having been set to 41 feet. The Arab company is headed by Bob Garland, wildcatter who brought in Oklahoma's Seminole pool.

Wildcat failure of the week was Imperial Oil & Gas Products Company's Mabeth Mining Co. 1, SE NW NW 12-6s-8w, Boon Township, Warrick County, abandoned at 1859 feet after drilling the McClosky.

Indiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Gibson County—		
Hollingsworth & Brander Dr. Co., Cooper 1	1000	2885
Spencer County —		
James Leggett Dr. Co. (Neff), O. Deeg 1	*	1776
Warrick County—		
Imperial O&G Products Co., Mabeth Mining	*	1859

*Failures; †Junked; ¶Million cu. ft. gas.

West Texas Fields

Garza Pennsylvanian test reworked for 125 barrels.

New oil pool opened on north line of Jones County.

Midland, Texas.—The restoration of flowing production from the deep Pennsylvania strike made by Gulf Oil Corporation's Swenson 1-B, northeastern Garza County, last December occurred last week when testing operations were resumed at the original producing level. The well flowed 125 barrels of oil and 40 barrels of salt water daily from perforations through casing in the lower Pennsylvanian at 7327-34 feet, with tubing packer installed so as to exclude a portion of the water that broke through the bottom shot holes. Acid treatment of the oil horizon was due to be made late last week.

Drilled primarily to try for production in the Ordovician, this test logged oil saturation and porosity at intervals in the Pennsylvanian below 6300 feet. A comparatively thin section of the Ordovician was logged in drilling into solid granite at 8104 feet. The hole was plugged back and 7⅝-inch pipe cemented at 7400 feet. Ten shot holes at 7327-34 feet yielded a natural flow of 36.7-gravity oil, but water broke in on the second day. The well swabbed and flowed 220 barrels of oil and 35 barrels of water in 24 hours prior to cementing retainers immediately below and above the gun-perforations so as to test the upper shows. Water was encountered in most of the prospective producing horizons in working by stages to the 6300-foot level, and none yielded sufficient oil to indicate commercial production.

Development of production and the appearance of granite at an unexpected high level caused an extensive lease play along a trend to the nothwest and southeast into Scurry County. Gulf Oil Corporation controls a vast amount of acreage in the general area, and is scheduled to start a new Ordovician test shortly on the Swenson ranch to comply with lease terms.

Humble Oil & Refining Company's Matador 1, Dickens County wildcat, is the only active deep wildcat along the new production trend indicated by the Swenson discovery, and was drilling at 6420 feet. The company contracted to drill a 6000-foot test as part consideration for lease on 466,500 acres of the Matador ranch, and has elected to continue to the Ordovician.

The trend of production to the east of the Wasson field, centering on the Gaines-Yoakum County line, is subject to extension since Sinclair Prairie Oil Company's Kendrick 1, ¼-mile east of the previous outpost, earned a potential rating of 1736 barrels of oil and 885,482 feet of gas. This well flowed natural from pay at 5001-5144 feet, revised measurement, with an elevation of 3570 feet, and was acidized for the completion gauge. Texas Pacific Coal & Oil Company's Brownfield 1, 1½ miles northeast of production in the Wasson field, was drilling with machine at 5020 feet. It is expected to make a producer, as it occupies a favorable structural position.

Shell Petroleum Corporation's Waples-Platter Company 1, 3-mile northeast outpost of the Bennett field, has drilled plugs from 5½-inch pipe, with the hole bottomed at 5000 feet, and is due to change to tools in deepening to the projected pay level. Top of the Yates was called at 3340 feet, and top of brown lime at 4340 feet, with an elevation of 3567 feet, indicating a lower structural position than the only dry hole near the Bennett field. Lease and royalty trading have been active in all directions from the pending outpost completion. Shell Petroleum Corporation's Ruyts 1, which widened the Bennett field 1¼ miles to the southeast last November, then experienced difficulty with both drilling and formation water, has been completed. The well pumped 198 barrels of fluid, 16 percent bs&w, at a plugged back depth of 5229 feet, or 1685 feet sub-sea.

Gulf Oil Corporation recorded 3 big producers the past week, including one of the largest wells in the Goldsmith field, Ector County. The company's C. A. Goldsmith 163, near NWc SE T&P Section 15, earned a potential rating of 5112 barrels, based on commission gauge of 2706 barrels of 38.8-gravity oil in 12 hours after using 4000 gallons of acid at 4185 feet.

Two outside tests drilled by the company in the Gulf-Waddell field, northern Crane County, encountered excellent porosity in the comparatively thin oil zone, and developed prolific wells. M. F. Henderson 16, near NW NE SW PSL Section 3, Block B-27, was given a potential of 8240 barrels of 34.6-gravity oil, with gas/oil ratio of 546/1, after using 5000 gallons of acid. This rating was based on a gauge of 2022 barrels of oil in 6 hours, with the last 3 hours used in determining the potential. The top of the main pay was logged at 3525 feet, and drilling was halted at this level when the well flowed 579 barrels of oil natural in 4 hours. At the start of the acid injection the tubing pressure was 450 pounds and the casing pressure was 850 pounds, and both dropped to zero when the formation absorbed the acid shot. The company's Waddell 25, near SW SW NE Section 11, southeast extension for the main field, drilled 1 foot into the main pay, topped at 3517 feet, and flowed 464 barrels of fluid, testing 16 percent b.s. and a trace of water, through casing in 1¼ hours.

Another half mile southeast extension for this Crane County area is being sought by Magnolia Petroleum Company's Edwards 12, SWc PSL Section 12, which is changing to cable tools after cementing 7-inch pipe at 3450 feet. Heavy gas production was found in the upper lime.

Four failures, including an outpost,

diminished interest in the sand dune sector along a northwest trend from the Church & Fields area, Crane County. Magnolia Petroleum Company's University 1-18, NW SW SE Section 18, Block 30. 1¾ miles from production, failed to respond to treatment with 1000 gallons of acid at 3349 feet, and was abandoned in sulphur water at 3364 feet. This outpost occupied a high structural position, but lacked porosity in the brown lime section at 2948-3323 feet. The lease expired shortly after encountering water. R. H. Henderson et al's University 1 and 2, southwest and northwest corners, respectively, of NE Section 8, were abandoned at 3345 feet and 3365 feet. University 2 tested small volume of oil after nitro shot and acid. This short-term lease was farmed out by Phillips Petroleum Company. The latter's University 1, SW NW SW Section 9, recntly encountered water at 3401-03 feet, with an elevation of 2639 feet.

Atlantic Refining Company and Ray Rhodes' Johnson 1-D, SWc T&P Section 43, Block 42, mile east of the Johnson 2-well pool, Ector County, and same distance north by east of production in the Foster field, provided a surprise development in flowing and swabbing approximately 450 barrels of oil in 22 hours. Saturation was logged at 4085-4225 feet, with an elevation of 2972 feet. Proration gauge was due late last week after using 3000 gallons of acid.

Sid Richardson et al's Coe 1, prospective 1½-mile northeast extension for the Slaughter field, Hockley County, has found it necessary to plug back to 4982 feet in order to exclude water found in drilling to 5182 feet, or 1636 feet sub-sea. Top of pay was called at 4937 feet. The test was awaiting results of acid treatment late last week.

West Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Emma)—		
Montecito Corp., E. Cowden 5	857	4226
Andrews County (Means)—		
Humble, R. M. Means 19	2771	4535
Shell, J. S. Means 4	2033	4530
Brewster County (Wildcat) —		
Wilcox et al, W. H. Kokernot 1	*	2330
Crane County (Church-Fields)—		
Henderson et al, University-Phillips 1	*	3345
University-Phillips 2	*	3367
Magnolia, University 1-18	*	3364
Phillips, University 1	*	3403
Tide Water-Atlantic, University 1-SG	257	3125
Wasomes Oil Co., University-Standard 1	82	3346
Crane County (Gulf-Waddell)—		
Gulf, Henderson 16	8240	3525
Ector County (Foster)—		
Arrow Drl. Co.-York-Harper, Inc., Foster 7	631	4321
Atlantic, Johnson 3-C	590	4230
Sunray Oil Co.-York-Harper, Inc., Foster 7-D	372	4263
Ector County (Goldsmith)—		
Devonian Oil Co., Scharbauer 4-A	1468	4205
Gulf, Goldsmith 163	5112	4185
Goldsmith 167	700	4220
Herbert Oil Co.-L. A. Greene, Cummins-Sinco 3	1108	4175
Landreth Prod. Corp., Scharbauer 6-M	1081	4187
Scharbauer 3-P	739	4198
Phillips Pet-Pure Oil Co., Cowden 52	691	4150
Shasta Oil Co.-Cordova Union Oil Corp., Scharbauer 7	1001	4203
Ector County (Harper)—		
Blackstock Oil Co., T. P. Land Trust 3-B	1476	4167
Ector County (North Cowden)—		
Broderick & Calvert, Holt 2	2225	4398
Landreth Prod. Corp., Holt 2	399	4364
T. P. Coal & Oil Co., Holt 1	779	4476
Gaines County (Wasson)—		
Continental, Wasson 3-52	880	4994
Langdon 2-43	1016	4974
Howard County—		
Ajax Drl. Co., O'Daniel 2	285	3169
Farley et al, Settles-Shell 2-A	661	1319
Magnolia, A. E. O'Daniel 12	356	2790
Moore Bros. Corp., Snyder 7-A	†	2619
Jones County—		
Consolidated Oil Co.-Ray Bros., McCaskey 1	50	3265
Fain-McGaha Oil Corp., Shaheen 1	328	1909
Shaheen 2	505	1881
Peckham et al, Avoca High School 1	50	3279
Pet. Producers Co., Steffens 1	480	1893
Pecos County (Masterson)—		
Childress Roy. Co., Masterson I.T.-I.O. 6	553	1485
Pecos County (Payton)—		
Pecos State Oil Co., Pecos River 3	250	2015
Pecos County (Wildcats)—		
Greene et al, Iowa Realty Trust 1	*	1392
Schkade et al, Neville 1	*	2558
Upton County (McCamey)—		
Parker Drl. Co., R. King-Texas Co. 1	*	2122
Shell, M. L. Baker 8	790	2223
Ward County—		
Gulf, Estes 115	650	2650
Mitchell et al, Allen 1	61	2175
Proctor et al, Landon 3	123	2252
Western Well Service Corp., Lackland 1-6	155	2100
Winkler County (Kermit)—		
Magnolia, Walton 217	70	3257
Walton 218	211	3257
Walton 219	146	3252
Yoakum County (Bennett)—		
Mabee et al, Willard 6	†	3250
Yoakum County (Wasson)—		
Aloco Oil Co., Willard 6	199	5154
Willard 7	311	5164
Denver P&R Co., Whittenburg 5-A	1768	5149
Humble, Ed. Randall 2	546	5110
Shell, H. L. Lowe 8	1060	5165
Sinclair Prairie, Kendrick 1	1736	5144

•Failures; †Junked; ¶Million cu. ft. gas.

New pool opened in Jones County area

Abilene, Texas.—A new oil pool near the center of the north line of Jones County and the authorization of two deep wildcat projects in counties adjoining on the north were outstanding developments in this district the past week.

Gregg Oil Company et al's C. D. Appling 1, near SW NW SW Section 32, BBB&C Survey, flowed by heads from Swastika sand at 2631-35 feet while lowering pipe for a completion test. It is situated 5 miles southwest of Stamford and ¼ mile west of Grisham-Hunter Corporation's Appling 1, which swabbed small volume of 34-gravity oil with water from sand at 2640-42 feet, then deepened and abandoned at 4605 feet. An east offset later drilled by Grisham-Hunter Corporation missed the oil pay and abandoned last August in water formation at 2641-59 feet. The third test for the area was slated to drill plugs from casing at 2630 feet and test late last week.

Ralph Carroll et al's Herndon 1, west central Jones County wildcat, that has been showing for a producer for several weeks, is rated at 25 barrels of oil daily after using a total of 12,000 gallons of acid by stages in the Noodle Creek pay at 2651-77 feet. It is located in Block 3, Goliad County School Land Survey No. 359, and 5 miles southwest of production.

The development of the lower pay in the Noodle Creek field, original Jones County strike, by deepening old wells from the Noodle Creek lime was given encouragement the past week. The Texas Company's W. E. Camp 4, southeast corner of 195-acre lease, T&P Section 13, Block 19, flowed 110 barrels natural in 24 hours from lime at 3135-40 feet. It originally was completed in 1929 at 2499 feet.

Amerada Petroleum Corporation is starting a 5500-foot wildcat in Haskell County on a geophysical prospect, centering 7 miles east by north of Haskell. Location is on the Chas. J. Kleiner 1440-acre lease, situated 660 feet from the north and east lines of the J. M. Cass Survey No. 57.

Stonewall County was credited with a wildcat showing oil and water, and is to be given another test in the southeastern portion of the county near previous exploratory tests. Forest Development Corporation's Boyd 1, near C NW NE H&TC Section 45, Block D, 7 miles northeast of Aspermont, filled 2000 feet with oil and an equal volume of water, based upon bailing test, from the Palo Pinto member of the Canyon at 4756 feet. Top of Palo Pinto was logged at 4687 feet, with an elevation of 1670 feet. Saturation at 4690-4706 feet failed to produce after cementing 7-inch at 4690 feet. Deepening with cable tools, the test logged gas at 4725 feet, and free oil at 4731 feet, then an increase in oil with water at 4741 feet. The hole will likely be plugged back for a production test.

Shell Petroleum Corporation is to start a deep wildcat shortly within the most densely explored sector of Stonewall County, with location tentatively assigned to H&TC Section 143, Block 1, 7 miles south by east of Aspermont. The company supplemented sub-surface information obtained from 4 failures drilled by General Crude Oil Company and one by Bert Fields and Monday Oil Company in 1937-38, with numerous core tests, ranging from 800 feet to 1000 feet in depth. Electrical survey of the formation was made in each of the core tests. The introduction of the electrical survey for checking geological markers in the core tests is the first on record for this district.

Texas Panhandle Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Sinclair Prairie, Cooper 14	232	3160
Gray County—		
Magnolia, fee (lse. 227) 26	254	2980
W. W. Merten 21-B	369	3270
Moore County—		
Shamrock O&G Corp., Smith 1	¶74.5	3118

•Failures; †Junked; ¶Million cu. ft. gas.

West Central Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
Geo. Christie et al, Henslee 1	*	1315
H. P. Evans et al, Kilgore 2	12	1131
Whitesides & Rogers, Newton 4	*	1260
Callahan County—		
E. E. Hill et al, Blakely 1	*	820
Iron Mt. Oil Co., F. E. Clark 1	*	920
G. M. Nichols et al, Jackson 1	*	852
Pueblo Pet. Co., Jackson 5	¶¼	934
Coleman County (Wildcat)—		
Arcadia Ref. Co., W. A. Roberts 1	*	3342
Coleman County—		
A. A. Goodman et al, Brown 1	*	900
Comanche County—		
O. L. Johnson et al, James 1	5	2835
Eastland County—		
V. Gamblin et al, G. C. Daniels 1	*	448
Palo Pinto County—		
A. Adkisson & Co., Costello 8	8	1396
Shackelford County—		
Charter Oil Co., Mimms 15	*	1736
W. J. Dellenheim et al, Lynch 1	*	235
Fox & Rudd, Shotwell 2	39	1562
Groover-Rose et al, Reed 1	*	1903
J. L. Hart et al, Sanders 2	*	650
Sanders 3	*	601
Iron Mt. Oil Co., Beck 6	950	3207
Lawson & Wheeler, Sanders 1	*	760
Lee & Key, Diller 11	7	528
Diller 12	6	563
C. J. Myers et al, Mathews 2	7	1158
Nelson & Walker, Hill 1	*	777
Patex Prod. Co., Shotwell 2	40	1648
J. H. Sedwick et al, J. F. Sedwick 1	*	722
West & Honea, Kinder 1	*	940

• Failures; † Junked; ¶ Million cu. ft. gas.

North Texas Fields

Deep wildcat tests are started in three counties

Wichita Falls.—Three North Texas counties gained additional deep wildcat projects the past week. Archer County is maintaining the lead in seeking new areas from the Strawn series, and its most promising test is in the northwest corner of the county near the Diversion Lake. E. P. Griffin et al's Waggoner Estate 1, SEc H&TC Section 3, Block 4, about 4½ miles southwest of nearest deep production in the K-M-A field, is a prospective producer from the lower Strawn, which carried oil saturation at 4393-4407 feet. Top of the lime was called at 4090 feet, or below the normal water level of the K-M-A deep area. Pipe was cemented at 4390 feet after cavings prevented a decisive drill stem test.

Completion of an oil well by Gri ffin and others' Waggoner Estate test was considered assured late last week when the well filled 400 feet with high-gravity oil in 7 hours after drilling cement plugs from the casing. No water was present with the oil, according to reports. The oil horizon is similar to the most productive zone in the Hull & Silk area.

Two deep tests in the northern portion of Archer County failed to produce in drilling to their original projective. Louis Sikes et al's Martin 1, SWc of Wm. Shaw survey, was halted after drilling to the Ellenberger at 5690-5790 feet. Harwell et al's Ford 1, Davis Meyer Survey, wildcat between the north end of the Hull-Silk field and the Ford pool, missed the saturated zone in the Strawn and was drilling at 4600 feet, with the Bend and Ellenberger as the next objective.

No date has been set for the production test of Bobby Burns et al's Browning 1, which indicated an oil producer when formation tester was used in oil saturated Strawn at 4432-61 feet on February 20. In the meantime an oil string has been cemented, and lease tankage erected. Owners are curing titles and adding to their protection. Location is in the Deer Creek community, and 7 miles southeast of Halsell. Bridwell Oil Company is starting a schedule deep test immediately north of Halsell, with location on the Furd Halsell ranch, Block 16, Washington County Railroad Survey.

British American Oil Producing Company has authorized a third test for its Rendham geophysical block, Baylor County, with location for F. C. Green 1-B, near center of Lot 27, Block 8, of J. E. Hix Survey. It is about 3 miles southeast of the company's 2600-foot discovery pumper. This oil horizon carried very little saturation, according to the log of Cope 1, which is drilling at 3810 feet to fulfill a 5500-foot depth contract.

North Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (K-M-A)—		
E. C. Oil Co., Mangold 11, blk 33..	456	3845
C. H. Staley et al, Mangold 11, blk 31	600	3858
Archer County—		
Rathke Oil Co., C. Cowan 3, blk 15	78	1137
Archer County (Wildcat)—		
Bridwell Oil Co., W. C. Jones 1, sec 23	*	1163
Oil Inv. Co.-Gulf 31-B	*	4480
Louis Sikes et al, M. M. Martin 1..	*	5790
Clay County—		
Houston Bowers et al, Shumake 9, blk 4	199	1165
Cooke County—		
Hutton-Witherspoon et al, Trubenbach 2	44	842
Trumter Oil Co., B. Voth 1	*	1919
Haskell County (Pardue)—		
Forest Dev. Corp., Pardue 3, blk 4	*	5510
Jack County—		
W. D. Cline et al, J. H. Hunt 1...	*	535
Danciger O&R, Inc., S. M. Ivey 6..	454	3097
M. E. Oil Co., D. M. Rumph 7....	5	530
Montgomery & Long, J. J. Powers 1	*	477
Montague County—		
W. B. Hamilton et al, M. Crow 1..	*	1067
Throckmorton County—		
Robinson et al, O'Dell 3, sec 909..	*	308
Wichita County (Jackson-Canyon)—		
King Oil Co., Crudup 6	35	2642
Wichita County (K-M-A)—		
Board of Mineral Dev.-G. W. Drl. Co., Big Wichita River 12	1200	3777
Continental, Waggoner Bros. 7-B-C, lot 13	720	3790
E. C. Oil Co., Lewis 5-A, blk 20....	768	3805
Fain-McGaha Oil Corp., Griffin 7-B, lot 3	1128	3839
Griffin 1-C, lot 6	1152	3832
A. P. Kouri et al, Martin 3-A, sec 36	9	3914
Mul-Berry Oil Co., Bradley 5.....	728	3970
Wichita County—		
Seaboard O&G Co., F. P. Warren 1	4	648
Young County—		
R. Campbell et al, fee 1, sec 231...	*	1057
Chambers & Hanks, G. W. Norton 1	*	900
King Oil Co., Texas L. & M. Co. 1-B, sec 207	*	755
Wooten & Steele, G. P. Stewart 1..	*	975
Young County (Wildcats)—		
R. R. Brader-O. Groves et al, Clark 1, sec 2	43	3870
E. D. Willis et al, G. P. Stewart 1-B, sec 1493	*	955

*Failures; †Junked; ¶Million cu. ft. gas.

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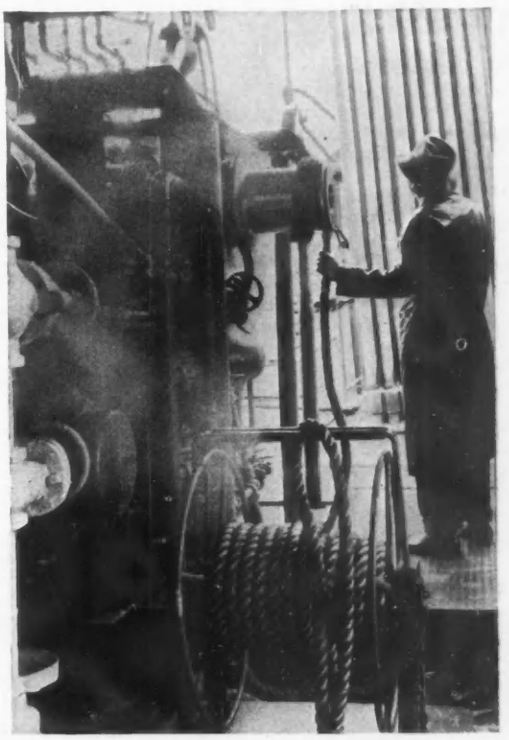

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East Texas Fields

Few changes in East Texas physical condition

Kilgore, Texas.—The quarterly survey of the water production and the lifting status of wells in the East Texas field prepared in January by the engineers of the Texas Railroad Commission failed to register any appreciable change in the physical condition of the field. The report was prepared while the commission's staff was being reduced in numbers and replacements made.

The survey credits the field with adding 51 pumpers and 83 gas or air lift wells during the last 3 months in 1938.

The production of water increased 15,842 barrels to a daily yield of 122,807 barrels, according to the report, while the number of accounted for water wells increased from 3777 to 4021. The average daily output of water on January 1 was placed at 30.54 barrels per well, representing a gain of 2.21 barrels per well.

Unofficial reports show approximately 9450 wells in the field as being equipped for artificial lift, and in excess of 6400 utilizing pumping equipment.

Plan deep test in Harrison County

Shreveport.—Werby, Fields & Vaughn are planning a deep test soon on a block of acreage they own north of Harelton, northwest Harrison County, Texas. Just south of this block Edson Petroleum Company and W. C. Windsor recently completed three core holes on an 8,000-acre block and ran electric logs in all three holes.

J. D. Furrh is securing some leases in Panola County, northeast of Carthage, around the G. Gillespie Survey. In the southern part of Sabine County, Texas, Sun Oil Company is paying rentals on its holdings but in the northern part of the same county along the Shelby County line, Magnolia Petroleum Company is reported to have forfeited a 6000-acre block. In San Augustine County, E. B. Larue's 8000-acre block around the William Humphries Survey, placed in escrow pending title examinations, is now being assigned to Gulf Oil Corporation.

Paul Pewitt's Rushing Estate 1, Mannan Smith Survey, Panola County but near the Joaquin gas-distillate field, is deepening after being shut down some months at 30 feet for heavier rig.

Shreveport.—Neel and McDaniels' C. W. McDaniel 1, William Snyder Survey, Joaquin, Shelby County, Texas, drilled ahead last week after formation tester run from 1380 to 1840 feet in chalk showed 500 feet of mud cut with gas in a 12-minute test with ¼-inch chokes at top and bottom. This test is ¾ mile south of Pundt and associates' Pickering Lumber Company 1, same survey, recently completed in the Glen Rose as an oil well that later went to distillate. There are three other gas-distillate wells in the Glen Rose in this district.

Texas approves drilling of 268 new tests

Permits for drilling 268 new wells in Texas were approved by the Texas Railroad Commission last week, 75 more than were allowed the week before.

One permit was approved in the East Texas field, in Rusk County, while operators in the remainder of the East Central Texas area reported 13 locations.

The Gulf Coast area topped the list with 111 locations including 34 in Harris and 17 in San Patricio County. Southwest Texas operators reported 42 permits with 11 in Duval County.

There were 50 permits approved by the commission for wells in West Texas including 19 in Ector County, while six locations were listed from West Central Texas.

Permits for drilling 35 new wells in North Texas were approved, while Panhandle operators reported 10 locations.

Humble building 26-mile line to Navarro Crossing

Authorization has been made by the Humble Pipe Line Company for the immediate construction of 26 miles of 4-inch welded line to connect the Navarro Crossing field, northwestern Houston County, with its Fairfield station, located on the multiple system out of the East Texas field. The Navarro Crossing field was discovered last April by Humble Oil & Refining Company, largest lease owner in the area, and has 6 flowing wells in the 5800-foot Woodbine pay that are prorated to 315 barrels daily on 5-day week. The production is currently being handled by tank trucks.

Starting March 1 Texas Pipe Line Company resumed moving American Liberty Oil Company's Rodessa crude to Port Arthur, Texas, after the latter's Rodessa runs had been handled during January and February by United Gas Pipe Line Company to Longview, Texas. East Texas Refining Company has begun delivering some of its distillate at Rodessa to Standard Oil Company of Louisiana. Tide Water Associated Oil Company recently shut down temporarily its gasoline plant on the Sexton lease, Section 14-23n-16w, at Rodessa.

DONALD C. BARTON. president of the American Association of Petroleum Geologists, will discuss the interpretation of aerial photographs at a special meeting of the South Texas Geological society to be held in Corpus Christi Monday, March 13, at 8:00 p. m. No dinner will be served, as is the custom at regular meetings. The meeting is to be held on the Plaza hotel deck. Dr. Barton is unusually well qualified to present this subject. The address has been delivered before various geological groups elsewhere in Texas and Louisiana and has been favorably received.

East Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Kilgore Area—		
Byrd-Frost, Inc., J. B. Watson 6-A (22.31-ac)	7800	3569
Gulf, Christian 24-A (164.19-ac)	7000	3656
Humble, Crim 185 (914.51-ac)	7300	3612
Overton Ref. Co., I&GN Ry. Co. 24 (19.58-ac)	1200	3570
I&GN Ry. Co. 26 (19.58-ac)	960	3565
Shell, Williams-Bonner 11 (36-ac)	6700	3644
Trippett et al, J. M. Johnson 4 (7.58-ac)	3600	3557
Longview Area—		
Humble, Willingham 19 (100.6-ac)	6000	3629
Shell, Bassham 12 (54-ac)	8400	3686
Landers 29 (132.99-ac)	4500	3785
Freestone County (Cayuga)—		
Carter-Gragg Oil Co., Johnson-Tidal 1	¶115	5314
Leon County (Buffalo)—		
Lone Star Gasoline Co., J. M. Duncan 1	¶115	5778
Marion (Jefferson-Rodessa)—		
Ark. Fuel Oil Co., Belcher 2, A. D. S. Coy sur	360	6126
Trinity County (Wildcat)—		
Taubert & McKee, Freedman 1 (70-ac)	*	2066

*Failures; †Junked; ¶Million cu. ft. gas.

East Texas Lifting and Water Status

	October, 1936	January, 1937	October, 1937	January, 1938	July, 1938	October, 1938	January 1939
Flowing wells making water	942	1,071	1,047	978	886	843	991
Pumping wells making water	850	1,042	1,967	2,389	2,617	2,780	2,830
Pumping wells immune from water	1,619	1,860	2,350	2,521	2,848	2,793	2,794
Total pumping wells	2,469	2,902	4,317	4,910	5,465	5,573	5,624
Air and gas lift wells making water	63	71	123	97	149	154	200
Air and gas lift wells immune from water	222	243	307	351	357	366	403
Total air and gas lift wells	285	314	430	448	506	520	603
Wells producing Woodbine water	1,827	2,151	3,026	3,462	3,657	3,746	3,984
Wells producing water other sources	28	33	19	13	6	31	37
Total wells making water	1,855	2,184	3,137	3,475	3,663	3,777	4,021
Woodbine water production in barrels	42,718	46,250	75,241	85,120	103,128	106,932	122,765
Water production in barrels other sources	72	77	28	13	8	33	42
Total daily water withdrawal in barrels	42,790	46,327	75,270	85,133	103,136	106,965	122,807
Average daily water production per well	23.07	21.42	24.72	24.49	28.16	28.32	30.54
Total completed wells	21,503	22,010	23,722	24,370	25,402	25,717	25,923
Daily allowable	437,172	447,778	480,708	491,852	511,715†	518,051†	522,030†

†‡Saturday and Sunday holiday from mid-May through June, and resumed September 3, excepting December 17, 1938.

Note:—203 depleted oil wells listed as plugged and abandoned in 1938.

Southwest Texas Fields

Oil found in Bird Islands distillate field.
Wildcat east of Alice cleaning into pits.

Corpus Christi.—Discovery of oil production in the Bird Islands distillate field of Kleberg County was apparent with Pure Oil Company and Superior Oil Company completing their second well in the submerged area. The well provides a 3500-foot northwest extension to production.

State 1, Block 155, Laguna Madre, drilled to 7320 feet and set casing on bottom. Perforations were made 7235-47 feet with 72 shots and the well was cleaning into pits at last reports. On a drill stem test after the perforations, the well commenced flowing in 10 minutes, and continued for 2¼ hours, making oil and mud, but no water. The average working pressure was 1550 pounds with the top pressure 2100 pounds. When the drill stem was broken down, three stands of oil and one stand of oily mud were recovered. Production is in the Frio.

Offsetting the bright news was a material set back for an important geophysical prospect in southern Jim Wells County. Magnolia Petroleum Company's Sam Maun 1, Block 10, La Gloria subdivision, was perforated at 7093-7110 feet and on a drill stem test flowed salt water in 63 minutes, building up 13 pounds pressure. The pipe was squeezed and new perforations will be made higher in one of the distillate sands shown while drilling. This prospect has been the scene of much leasing and royalty trading.

Gravis & Doran's Clark 1, wildcat one mile east of the East Alice field and apparently on a separate structure, is cleaning into the pits, making wash water with a show of oil through 9/64-inch choke. The well built up pressures of 175 pounds on tubing and 275 pounds on casing, but these slowly were rising. Perforations had been made at 4805-14 feet in Frio sand. A squeeze job previously made to cut off salt water slightly lower may be preventing the flow of fluid from the formation. Another set of shots likely will be made.

One mile farther east, Tom Graham's Adams 1 was running drill stem test of sand at 5691-99 feet.

Seaboard Oil Corporation of Delaware's Riverside strike in Nueces County, was doing poorly. The discovery oil well, Wilson 2, was squeezed, after the gas volume rose to a high level. Other tests in the immediate vicinity either showed nothing or salt water in the discovery sand. Shell Petroleum Corporation's Griffith 1, 2150 feet north of the oil producer, and newest well to drill to this level, found the discovery sand at 5105-25 feet, carrving oil show. A drill stem test at 5005-23 feet recovered 800 feet of oil and salt water with six pounds pressure in five minutes. The bottom hole pressure was 2150 pounds. It was going ahead.

J. K. Culton's McCampbell 1, three miles west of the McCampbell field, San Patricio County, was coring below 7175 feet, not in the sand. It showed water at the other levels productive in the McCampbell field. The field's townsite drilling campaign is under way with Grote and Corgey's Conn Brown 1 drilling below 6000 feet. There have been 52 permits issued for wells within the Aransas Pass City Limits, all tests being projected to the 7100-7200-foot sand.

Hewit and Dougherty defined the La Rosa field, Refugio County, When Rooke 1-A, one mile southwest of production was abandoned as a failure at 7021 feet. It failed to find anything promising in any of the sands.

Between the above well and the main field, Morgan-Gulf Oil Corporation's Rooke 1, was at 6350 feet with casing set. It failed to find production in the 5900 and 6300-foot sands, but will be completed in a new sand at 5709-14 feet where it showed for a producer when originally drilled. Another new sand for the field was encountered at 5846 feet, showing for a gasser spraying distillate.

Continental Oil Company has again entered southern Calhoun County on trend with its heaving shale prospects and is to drill a deep test on the J. J. Welder ranch about five miles south of Seadrift. The well will be on the E. Hidalgo Grant, near San Antonio Bay.

South Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Atascosa County—		
R. C. Stanley, Schumann 1, Malone sur, wildcat	•	1722
Bastrop County—		
Coffield, Carroll 8 (Carroll)	10	2255
Bexar County—		
Putnam, Wetz 14 (Von Ormy)	7	659
Caldwell County—		
Martell, Smith B-2 (Salt Flats)	83	2698
Ogden, Moore 2 (Dale)	35	2385
Guadalupe County—		
Chiquita, Malear 1 (Darst Creek)	12	2615
Williams, Weber 1, Torres sur, wildcat	•	1433
Medina County—		
Clopton & Mitchell, Wilson 1, sur 509, wildcat	•	2005
CORPUS CHRISTI DISTRICT		
Aransas County—		
Moran Corp. of South, Duphone & Anderson 1, McCampbell	1100	7216
Shasta, Winsor & Henry 1, McCampbell	1000	7218
Bee County—		
DeLange, B. F. Voss 1, S. May sur, wildcat	•	4036
Calhoun County—		
Humble, Welder A-26, Heyser	900	5477
Hidalgo County—		
Brinkoeter, Guerra 1, Samfordyce	350	2857
Fohs, Guerra 3-B, Samfordyce	125	2909
Jim Wells County—		
Graham, Bankers Mortgage E-3, E. Alice	450	5396
Howell, Wright 1, sur No. 14, wildcat	•	6796
Nueces County—		
McCurdy, State 1, Luby	500	5044
Seaboard, Shafer 13, Luby	375	4363
Sun, Flinn 2, Clara Driscoll	500	5442
Union, Simmonds 2, N. Agua Dulce	¶10 & 100	4864
Refugio County—		
Copano, O'Connor 2-C, Melon Creek	850	5900
O'Connor 3-C, Melon Creek	900	5897
Morgan, Mitchell 3-A, Refugio	¶2 & 30	6905
Hewitt & Dougherty, Rooke 1-A, La Rosa	•	7021
San Patricio County—		
Walter Brauer et al, Fee 2, McCampbell	1200	7175
Landon Jones, Dixon 1, McCampbell	1100	7151
Mortex, Lemon & Thompson 1, McCampbell	850	7190
Richardson, Cotter & Ayres 2, McCampbell	•	7143
Slimp, Hoffman 2, McCampbell	1000	7168
Victoria County—		
Stanolind, Vanderberge & Hill 6, E. Placedo	500	6376
Union, G. Keeran 9, Keeran	700	6280

Laurel field outpost cores saturation

Laredo.—Laurel field, Webb County, was restored to the limelight last week by Smith & Story, Inc.'s Houston Oil Company of Texas 1, ½ mile northwest of production. The well cored oil sand at 1834-45 feet, Mirando cap at 1845 feet, sand and shale streaks 1845-1866 feet. It was going ahead to the Laurel sand expected around 2200 feet.

On a drill stem test at 1834-44 feet, tool slipped 5½ feet and in 10 minutes, the well recovered several joints of mud and oil and some free oil. Cores of the sand section below this level had good oil odor and stains. The sand is in the Mirando zone.

This well, located in the southeast corner of Section 24, is on the southeastern portion of a block assembled for Smith and Story, Inc., by Clifton E. Wolcott. These operators and the Rosenberg interests hold all acreage in the general area.

Gravis & Doran's Parr 1, Section 21, 6000 feet northeast of Sweden field production in Duval County, was at 5998 feet in sidetracked hole with casing set on bottom. It will test sand near the bottom, as well as a zone at 5865-74 feet, corresponding to the field sand. It originally had been drilled to 6281 feet, but plugged back and sidetracked.

Holbrook-O'Farrel Company's E. L.

Company, Well and Location	Init. Prod. Bbls.	Depth
LAREDO DISTRICT		
Duval County—		
Colmena Oil Co., DCRC 1, Colmena	•	1600
Continental, Driscoll 33-A, Driscoll	500	3401
Hiawatha, Parr 23, N. Sweden	250	5486
Humble, White B-12, Lundell	15	1524
White B-13, Lundell	69	1525
Lanning, Noake & Evans, Peters 9, Rancho Solo	81	1925
Magnolia, DCRC 19 (201), Eagle Hill	100	1464
Spence 2, Tesoro	•	5238
Weil 28, Hoffman	145	2766
Schimmel, Peters 1, Rancho Solo, wildcat	•	3035
Sun, Breuggeman 9, Fitzsimmons	350	4342
Tarrant, Farrias 2, N. Sweden	•	4380
Transwestern, DCRC 17 (294) Casa Blanca	91	1183
Jim Hogg County—		
Humble, Bass 8, Kelsey	200	4733
Karnes County—		
Howeth, Porter 1, Musquiz sur, wildcat	•	4303
McMullen County—		
Ezzell, Fee 28, Ezzell	•	1561
Jones, Ezzell 69, Ezzell	315	1553
Shumway & Burns, Ezzell, wildcat	•	1725
Starr County—		
Bilstrom & Bone, Garcia, Por 71, wildcat	•	1203
Hall & Smith, Margo 1, Por 70, wildcat	•	2506
Henninger, Guerra 1, Por 56, wildcat	•	1205
Sun, McKinney 4, Sun	¶5 & 25	5382
Zimmerman, Tijerna, sur 299, wildcat	•	1360
Webb County—		
O'Hern & Ryan, Garcia 2, Killam	45	1989
Zapata County—		
Buffalo, Lopez 3-A, Mirando Valley	40	1887
Hinnant 5-A, Mirando Valley	70	1916
Nordan & Morris, Haynes 9-C, Comitas	79	1245
Haynes 13-C, Comitas	•	1274
The Texas Co., Jennings 127, Escobas	52	1310

•Failures; †Junked; ¶Million cu. ft. gas.

Miles 1, in Survey 143, southwestern McMullen County, proved a disappointment on two attempts to complete in Mirando sand topped at 968 feet. Water broke in, apparently from a poor cement job and the well is drilling ahead. It had sand with oil showing from 968-75 feet.

Gas is hampering Samfordyce extension

Mission.—High gas/oil ratio has hampered completion of Fohs Oil Company's Ed Sullivan 1, discovery well of oil production on the downthrow side of the Samfordyce fault in Hidalgo County. The well was completed through 20 perforations at 3424-37 feet, the section being reperforated at 3432-37 feet with 12 shots. It flowed 54 barrels of 24.8-gravity Mirando type crude plus 150,000 cubic feet of gas per day through 11/64-inch choke under pressures of 1230 pounds on tubing and 1450 pounds on casing.

Medina County wildcat watched

San Antonio.—Gilcrease Oil Company's W. S. Lilly 1, Survey 1359, wildcat in southeastern Medina County, was expected to reach the Edwards limestone over the week-end. It is running higher than several tests in the general area and may lead to the discovery of a new oil field. It was below 2960 feet, in the Buda limestone, at last reports. The Austin chalk was topped at 2707 feet and Eagleford at 2890 feet.

In Zavala County, H. F. Wilcox Oil & Gas Company's Gilliam 1, east of the Batesville discovery well, is in a crevice at 4113 feet. It is attempting to restore circulation, preparatory to either drilling ahead or testing.

Texas Gulf Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Humble, Wilcox 7	336	7095
Clear Lake—		
Humble, Hutchinson 3	178	5843
Conroe—		
Humble, Moore 6	663	5113
Dickinson—		
Cron & Gracey, Fee 1	432	8069
Midstates, Holmes 2	350	8650
Fairbanks—		
Amerada-Stanolind, Post 1	82	6844
Silberger 4	121	6864
Smith 6	150	6853
Thompson 3	146	6850
White 4	150	6852
Johnson-Johnson, Mahoney 1	150	6825
Friendswood—		
Humble, Anderson 1	600	6046
Goodwin B-10	624	6044
West Fee B-14	600	6039
Hardin—		
Gulf, Tullos 4	287	7626
Hastings—		
Humble, Lerew 4	159	6061
League City—		
Phillips, Brittnacher 1	*	9165
Lochridge—		
C. M. Lusk, Ramsey 5	222	6365
Moss Bluff—		
Crown Central, Kyle 2	*	760
Old Ocean—		
Harrison & Abercrombie, Buck 1	350	10,550
Orange—		
Ryan & Thompson, Chesson 4	564	5968
Pickett Ridge—		
Peyton Bros., Duson 1	24	4724
Thompson—		
Humble, Lockwood-Sharp A-44	314	3510
West Columbia—		
Texas Co., Phillips 11	480	5720
Brazoria County—		
Humble, Anderson 1, Anchor area, S. Marsh sur	*	10,033
Wharton County—		
Helmerich & Payne, Myatt 1, w of Danevang, E. T. R. R. sur	*	6515

*Failures; †Junked; ‡Million cu. ft. gas.

Texas Gulf Coast

Showing indicates oil production on Bolivar Peninsular. Satsuma production is extended northwest by small well.

Houston.—Sun Oil Company was washing Cade 2 on Bolivar prospect, Galveston County, at a late hour March 10. The wildcat indicates it will open the first oil field in the Texas Gulf Coast this year. Cade 2 was drilled to 8009 feet and 9⅝-inch casing was set at 7997 feet. It was perforated from 7474 to 7478 feet. A 5½-hour drill-stem test from 7439 to 7513 feet through ¼-inch chokes flowed 200 barrels of fluid, from 2 to 8 percent salt water and the balance 35-gravity oil. Pressure was 1200 pounds. It was killed, tanks were installed and then tubing, packer and screen were set. This is the fourth test on this prospect.

Northeast of production at Fairbanks, Harris County, Union Producing Company was preparing to core deeper at 7030 feet after making a drill-stem test in Murphy 1 which showed oil. A sand cored at 7018 to 7030 feet in an 8-minute test showed 11 thribbles of oil and two thribbles of mud, no salt water, through ¼-inch chokes. Pressure was 120 pounds.

Northeast of the above well, Kirby Petroleum Company's Daniels 1, S. S. Reynolds Survey, was flowing gas, distillate and washwater last week after perforating casing from 7203½ to 7211½ feet. Flow was through a ¼-inch choke and tubing pressure was 2490 pounds and casing pressure 2475 pounds. A previous test from 7237 to 7239 feet showed salt water. The company may plug back and test the 7019-foot sand.

On the southeast side of Fairbanks, Ralph Johnston et al's Mahoney 1 flowed 150 barrels daily through a ⅛-inch choke after casing was perforated from 6821½ to 6825½ feet with a tubing pressure of 1200 pounds and a casing pressure of 1000 pounds.

William & Gillespie's Behne 1, northwest of production at Satsuma, WCRR Section 2, Harris County, is rated as one of the major extensions in the Gulf Coast this year and adds to the potential value of Satsuma field. It flowed 4 to 5 barrels of fluid per hour, 10 percent wash water and 90 percent oil through a ¼-inch choke. Tubing pressure was 425 pounds and casing pressure 400 pounds. Casing was perforated with 18 shots from 6853 to 6859 feet.

Phillips Petroleum Company's Ott 1, north of the discovery well at League City, Galveston County, was perforated with 24 shots from 9243 to 9260 feet and came in flowing 5 barrels of fluid per hour, 60 percent oil and 40 percent wash water, through a 3/64-inch choke. Tubing pressure was 550 pounds and casing pressure 1300 pounds. Hole was drilled to 10,450 feet and 7-inch casing set at 10,427 feet. The first test, from 9245 to 9263 feet, showed oil and salt water. The company's Stewart Title Company 1, S. F. Austin Survey, was drilling in shale at 10,081 feet after coring oil sands at 9774 to 9785 feet and from 9823 to 9850 feet. Salt water sands were cored from 9850 to 9860 feet. Midstates Oil Company's Stewart A-2 was drilling in shale at 9843 feet after coring salt water sands from 9775 to 9797 feet and from 9817 to 9839 feet.

Wynn Crosby's Wilson 1 in the Algoa area, A. G. Reynolds Survey, Brazoria County, was coring in shale at 5820 feet at the end of the week. The wildcat logged salt water sands in the Miocene formation.

On the northeast flank of Eureka, Harris County, Jack Frazier's Shady Acres 1 came in last week flowing 25 barrels per hour through ¼-inch choke with a tubing pressure of 1750 pounds and a casing pressure of 2150 pounds from perforations at 7684 to 7698 feet. The gas/oil ratio was 7000 to 1.

California companies move operating office to Houston

Texas headquarters of Standard Oil Company of Texas and The California Company were moved from Dallas to Houston on March 1. Standard Oil Company of Texas operates in New Mexico and Texas and The California Company in Louisiana and Mississippi. Both are subsidiaries of Standard Oil Company of California. Transfer of the offices effected about 40 employees who moved to Houston and increased the personnel of the Houston office to 70. Officials moving to Houston include A. J. Cunningham, manager; Harvey Hardison, chief engineer; L. Oroynskie, chief geologist; G. N. Larson, assistant manager; L. M. Lamar, superintendent of titles; Roland Gass, assistant superintendent of titles, and H. R. Morse, chief accountant.

Ask boundary change for East Bryson field

The Texas Railroad Commission has been requested to move northward its line fixing the north boundary of the East Bryson field in Jack County. The request was made last week by J. A. Worsham who owns an area which has been developed on the 20-acre basis, while the East Bryson field has been developed on a 10-acre basis.

The change would move the line to a point beginning in the center of the north line of the J. G. Enloe Survey, and westward to include the BBB&C Survey and thence northward to the northwest corner of the BBB&C Survey.

HAROLD B. FELL, executive vice president of the Independent Petroleum Association, Tulsa, was the chief speaker before the meeting of the Panhandle Producers and Royalty Owners Association at Amarillo, March 11.

South Louisiana

St. James Parish wildcat indicates it will open a new field. New and shallower sand uncovered at Golden Meadows.

Lake Charles.—Shell Petroleum Corporation's Mrs. H. Schexneyder 1, LaPice prospect, Section 38-12s-15e, St. James Parish, indicated last week that it would open the second oil field for St. James Parish. A drill stem test from 10,376 to 10,392 feet showed 17 stands of 32 gravity oil, one joint of mud and no salt water through quarter-inch chokes, with a 115 pound pressure. A core from 10,392 to 10,397 feet showed sandy shale with a slight show of oil. At the end of the week the wildcat was down to 10,465 feet in shale. The first oil field for St. James Parish was at Convent, discovered by Continental Oil Company after Shell Petroleum Corporation established the area as a salt dome.

On the St. Gabrielle prospect in Iberville Parish, Shell Petroleum Corporation's Natalbany Lumber Company 1, Section 18-9s-2e, is below 7800 feet in shale and is reported to have encountered some oil shows up the hole.

Vendome Petroleum Company's Kennelworth 1, northeast of St. Bernard, St. Bernard Parish, was drilling in shale at 11,198 feet. An electrical log showed eight ohms from 10,990 to 11,050 feet. Side wall cores showed gas and no oil. The wildcat already had logged over 50 feet of oil sand at 10,597 to 10,650 feet and an electrical log indicated that this sand might produce oil. If the wildcat proves a commercial producer it will open the first field for the Parish.

Sid Richardson's second well in the Eola field, Avoyelles Parish, is nearing the producing Wilcox sand. Haas investment Company 2 was down to 8098 feet at the end of the week and cored a sand at 7475 to 7481 feet in the Sparta which carried an odor of oil. The well cored oil sands from 6506 to 6511 feet and salt water sands from 6511 to 6521 feet in the Cockfield formation. Richardson's Haas Investment Company 3 was coring in Sparta formation at 7868 feet, after coring oil sands in the Cockfield at 6497 to 6499 feet.

A new sand was indicated for the Golden Meadows field, Lafourche Parish, by Martex Oil Company's Falgout Holding Company 2, Section 9-19s-22e, when broken sand with good oil shows were cored from 2636 to 2664 feet. The hole is being carried deeper and at the end of the week it was down to 4409 feet in shale. The Texas Company discovered this field last week with a completion at 8500 feet. The Texas Company has two wells drilling now at Golden Meadows below 10,000 feet.

Roper & Todd, Houston geologists, have made location for Levert 1 at Pine Alley prospect in St. Martin Parish. It is 660 feet due east of the northwest corner of lot 40 of Section 44-10s-7e. The wildcat is contracted to 9000 feet or deeper. It is on a 2500-acre block which has been worked with gravity meters, torsion balance, reflection seismograph and refraction seismograph. All geophysical work in this area indicated some kind of a structure. One picture showed 150 feet of closure. H. R. Smith, Halliburton Oil Company, Continental Oil Company, Magnolia Petroleum Company and Sun Oil Company are the other lease holders at Pine Alley.

The Texas Company's second well at Horseshoe Bayou, State 2, St. Mary Parish, tried to run screen to a new sand last week and stuck the equipment up the hole. Screen is being pulled to reset. State 2 was perforated 11,800 feet for a production

South Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bancroft—		
Republic, Whitman 1	378	7344
Edgerly—		
Commerce Oil Co., Muller 1	*	3050
Jennings—		
Shell, Prather 1	674	7310
New Iberia—		
Canal Oil Co., Sabtier 5	225	2507
Texas Co., Hanszen B-3 (wo)		*7133
Port Barre—		
Pan American, Nezat 1	*	5404
Villa Platte—		
Continental, Fontenot 1	259	9090
Vidrine 1	360	8976

* Failures; † Junked; ¶ Million cu. ft. gas.

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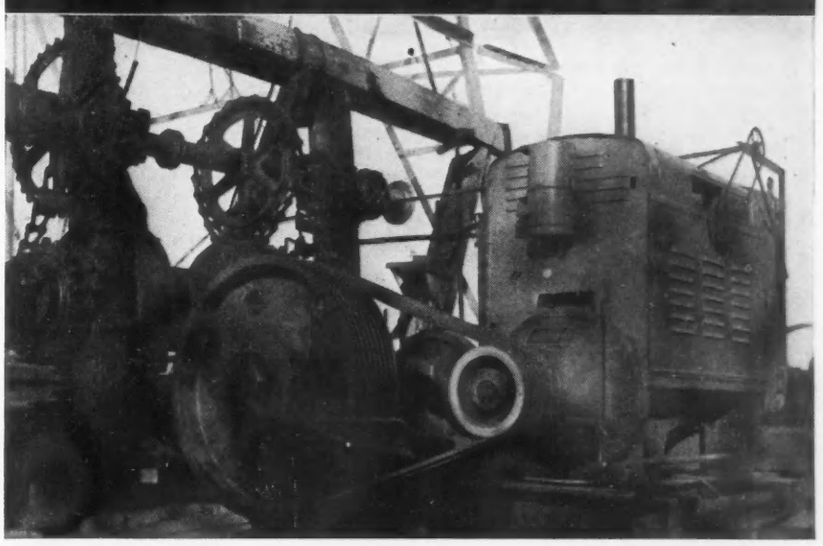

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test. An electrical log indicated that this sand might produce oil.

Offshore of Cameron Parish in the Creole field, Superior Oil Company is taking side wall cores in State Gulf of Mexico 5 with the hole bottomed at 7197 feet. An electrical logging device indicated oil sands at 6870 to 6880 feet and around 6705 feet. This is a new sand for the field.

The Texas Company is attempting to find a deeper sand at New Iberia field, Iberia Parish. Renaudet et al 1, Section 71-12s-7e, cored a broken sand formation with a show of oil from 8330 to 8338 feet. Nine and five-eighths-inch casing was set at 8339 feet. The same operator's Hanszen 3-B was worked over and abandoned at 7133 feet in salt.

The Texas Company has made another location for a well at Lake Mongoulois, St. Martin Parish. State 7 is 3966 feet north and 4623 feet east of the southwest corner of Section 10-10s-9e.

On the southeast side of the Bancroft field, Beauregard Parish, Republic Production Company completed Whitman 1. The well was perforated with 10 shots from 7365 to 7369 feet and came in flowing 380 barrels of 42.1 gravity pipe line oil daily through a 3/16-inch choke with a tubing presure of 1125 pounds and a casing pressure of 600 pounds. Location has been made for Whitman 2, 330 feet north and 330 feet west of the SEc NE 15-6s-13w.

The Texas Company has encountered fishing trouble in Bastian Bay 1 on the Bastian Bay prospect in Plaquemines Parish. The hole is bottomed at 10,029 feet in shale, and nine joints of pipe were twisted off.

North Louisiana Fields

Sixth well in Bodcaw sand at Cotton Valley has good flow. Commission orders 40-acre spacing for Shreveport field.

Shreveport.—Possibly the best oil well yet completed in the Bodcaw "E" sand in the lower Marine series at Cotton Valley, Webster Parish, was brought in last week at Stanolind Oil & Gas Company's and Delaney's Pardee-Coffee 1, C NE SW 36-21n-10w, which on first 12-hour gauge flowed 751 barrels of 42.8-gravity oil through ½ inch choke, with casing pressure 2250 pounds and tubing, 768 pounds. Total depth is 8627 feet. This is the sixth oil well completed from the Bodcaw horizon at Cotton Valley. This test is on the southeast flank of the structure and in the same section with the discovery oil well of the lower Marine in that field. With elevation of 183 feet it topped Travis Peak at 5932 feet and lower Marine at 8069 feet.

Hunt Oil Company's Bodcaw-Stewart 4, NW SW 34-21n-10w, was also preparing to perforate casing for completion in the Bodcaw, total depth being 8431 feet. Hunt-Stanolind's Coffee-Webster 1, C NE NW 36-21n-10w, was also testing in the lower Marine, total depth being 8470 feet.

The Shreveport field, which has 13 oil wells and 1 gas-distillate well, had two operations at the testing stage, W. C. Leisk's Sinclair 1, NW NW SE 26-18n-14w, total depth 5565 feet; and Hurricane Petroleum Company's Chandler C-1, C SW SE 34-18n-14w, total depth 5619 feet. Although the Shreveport field had no new locations announced for the last week it had five other operations drilling and two others rigging.

Announcement was made last week that Arkansas-Louisiana Gas Company's Gayoso 2, C SW SE 14-16n-10w, Bienville Parish, a semi-wildcat near Lake Bistneau, would be deepened to the lower Marine. Total depth is now 6508 feet and it is drilling ahead. With elevation of 188 feet it topped Travis Peak at 5430 feet. Union Producing Company took an interest in the deepening of the test.

Retroactive to March 1, more stringent regulations governing operations in the Shreveport field were promulgated March 4 by Louisiana Conservation Commission in its allowable order for March for this field.

Where production heretofore was a flat 300 barrels daily for each of the 13 wells in the field, the new order allocates production for each well individually on the basis of acreage, bottom-hole pressure and gas/oil ratio. The maximum gas/oil ratio was set at 2,000/1 to check waste in the field estimated at 40 to 50 million cubic feet daily. Under the new order only a total gas production of 7,911,959 cubic feet daily for all oil wells in the field is permitted.

40-Acre Spacing

The order set the drilling pattern at one well to each 40 acres, it being provided that the state through ownership of Cross Lake, city water supply, one end of which is inside proven producing limits, shall share in royalities when any drilling unit includes part of the lake bed to complete an acreage unit. This may eliminate any need to drill in the lake bed proper as the lake, although several miles long, is not more than two miles wide and not that wide at the southeast end that protrudes into the oil field as presently located. Directional drilling had previously been mentioned as a solution to lake-bed drilling should this problem arise. Only one well at present is definitely a lake-side well.

The order provides for metering all

North Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo (Shreveport)—		
C. D. Loe et al, Lionel Meyer 1, 33-18n-14w	*	5626
Webster (Cotton Valley)—		
Ohio, Merritt 1, 14-12n-10w	216	5913
Stanolind & Delaney, Pardee Coffee 1, 36-21n-10w	1502	8627

*Failures; †Junked; ¶Million cu. ft. gas.

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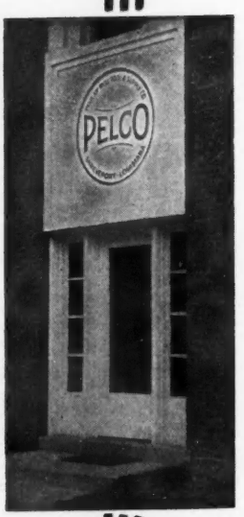

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New Iberia—Monroe
Cotton Valley—Greggton
Magnolia—Houston

gas that shall be produced from the field subsequent to the effective date of the order. Power is also given the conservation commission to designate location of wells, acreage to be unitized, and to require pooling smaller tracts to establish as nearly as possible these units in a manner to afford every owner an opportunity to participate in some unit and to permit drilling of units when a majority of the acreage has been pooled.

In the proviso governing acreage the order provides that in no case shall more than 45 acres be nominated for each well and the length of any tract nominated for acreage allowable shall not be more than twice its width. A permit for but one location shall be granted on a tract of 40 acres or less. Heretofore, a 40-acre space rule has been followed for wells outside the city limits and 10 acres inside the city limits, under verbal orders of the commission.

Recycling plant begins operation at Cotton Valley

Shreveport.—Ohio Oil Company's experimental pressure-maintenance plant at Cotton Valley, Webster Parish, Section 26-21n-10w, will begin operations the coming week.

Capacity of the unit is 15 million cubic feet of gas daily. It will operate between the range pressures of 1300 and 1600 pounds on suction and 3000 to 3500 pounds on discharge.

The output well will be A. H. Gray 1, Account 2, Section 26-21n-10w, and the input well will be A. H. Gray 23, Section 27-21n-10w. These two wells are Bodcaw "E" sand gas-distillate wells of the lower Marine horizon. After the distillate is extracted from the gas, the gas will be returned to the producing horizon.

This will be the first of a series of units to be installed in this field if the initial unit operates successfully. There are more than 100 such wells in the lower Marine horizon at Cotton Valley.

Plans are under way for recycling plants on several gas/distillate structures idle for some time, and the number of such plants is expected to show a marked gain the next 12 months, because they offer producers relatively good incomes from relatively small investments.

Eola spacing

Alexandria, La.—The Louisiana Conservation Commission in a temporary order has placed the spacing rule for the Eola field, Avoyelles Parish, at one well to every 10 acres for wells producing from the 8500-foot horizon. No drilling unit shall be longer than twice its width, except that where evidence is adduced that this rule would do irreparable injury.

Before the drilling of any well the operator shall submit a proposed casing program and shall not proceed with drilling operations until this casing is approved by the conservation commissioner.

IRA KING has been added to the conservation department of the Oil and Gas Division of the Texas Railroad Commission and has taken his post as investigator at Corpus Christi.

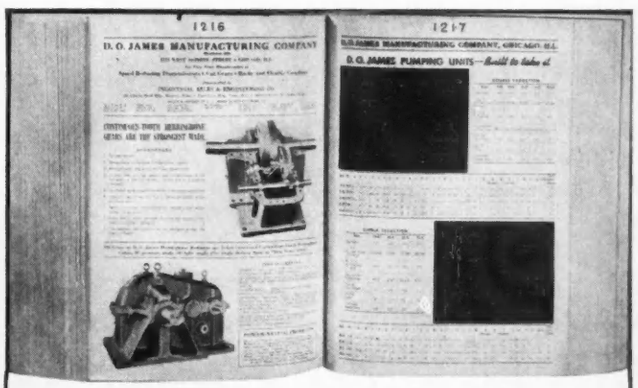
Arkansas Fields

Magnolia south extension test has formations lower

El Dorado, Ark.—Apparently the Permian lime producing structure at Magnolia (Kerr-Lynn) has begun to close to the south, as evidenced by the correlation of Alice Sidney Oil Company's Crisp 1, SE NE 23-17s-20w, Columbia County, south outpost well, on top of the Permian lime, with Normandie Oil Company's L. Garrett 1, its north offset. Alice Sidney's Crisp 1 topped the lime 42 feet lower than the north offset well, picking up the Buckner formation at 7391 feet and top of the Smackover lime at 7336 feet, topped oolitic lime at 7346 feet and had porosity from 7362 to 7374 feet and the main porosity was topped at 7383 feet; total depth is 7425 feet. Testing operations were scheduled to begin March 11.

Another operation at Magnolia was also at the testing stage last week, this being Southwood Oil Corporation's Hutchinson 2, SE SW 14-17s-20w. Four other operations at Magnolia are drilling and another rigging.

Most interesting wildcat development of the week in Arkansas was the leasing by Standard Oil Company of Louisiana of the 1900-acre R. S. Warnoch tract centering around Section 25-16-20, Columbia County, south of McNeil. Popularity of this area is due to the assumption that a ridge is located there and separated from the Magnolia pool by a rather deep trough. East of McKamie and in township 17,



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range 23, LaFayette County, Gordon Collins continues to secure leases. J. K. Wadley is leasing in township 16, range 27, Miller County, ten miles northeast of Fouke in an area where Standard Oil Company of Louisiana is detailing with seismograph.

Mississippi asks new bids on Gulf tideland leases

Jackson, Miss.—Having been unable to agree on terms of a contract with Federal Royalties Company of Houston, Texas, awarded a lease on 400,000 acres of Mississippi Sound (Gulf of Mexico) state-owned land, the Mississippi State Mineral Lease Commission has called for submission of new bids for the acreage on March 23 at Jackson.

The successful bidder is said to have balked at the demand there should be no delay in beginning exploration work in the sound, that operations should be continuous and that wells should be drilled to a minimum depth of 10,000 feet unless the commission decided otherwise. By the time the bidder decided to accept all the state's terms new bids had been called for. There were only two bidders when the lease was awarded in February.

Considerable leasing is under way in various parts of Mississippi, most particularly in the southern part "in the trend." Besides Wilkinson County in the southwest part of the state where the "play" recently was revived following the discovery well at Eola, Louisiana, Stone, Perry, Walthall, Amite and Marion counties have seen new blocks assembled in recent weeks. In Marion County, Gulf Refining Company has just completed a 15,000-acre block in township 3 north, range 19 west, five-year leases. The Texas Company is renewing leases in township 2 north, range 7 west, Greene County, southeast Mississippi.

In the delta section, Ryan and Anderson of Jackson have just completed a 16,000-acre block in townships 10 and 11 north, ranges 6 and 7 west in Sharkey County. J. B. Turner of Dallas, Texas, has assembled a wildcat block in Hinds County near Learned for a proposed 8,000-foot test. W. A. Williams of Booneville, Mississippi, has assembled leases in Prentiss County, 20 miles southeast of Booneville, for a 2000-foot test.

Wesson Oil & Gas Development Company of Wesson, Mississippi, is expected to spud a 5,000-foot test within 3 months on a block near Beauregard, Copiah County, it assembled several months ago.

A Mott-Smith geophysical unit has recently entered Monroe County, Florida, west of Miami.

Mobile, Ala.—H. A. Stebbinger and associate's Robertson 1, NE NE 19-10n-26e, Barbour County, Alabama, continued testing without showing last week at 4950 feet, after 4500 feet of 7-inch casing was set and 540 feet of liner, the last 350 feet perforated, was run to bottom at 4950 feet. A large number of oil men from various parts of the Mid-Continent area visited the location during the week. Casing was set after reported oil showings.

Arkansas permits

El Dorado, Ark.—Five drilling permits were issued last week by the Arkansas Oil and Gas Commission, as follows: Clay County: A. L. Ginther, Gordon 1, located 116 feet west and 120 feet north SEc SE NE 22-19n-7e; Columbia County: Phillips Petroleum Company, Askew 1, 660 feet south and 1980 feet east NWc 4-17-21; Union County: Lion Oil Refining Company, J. H. Calloway 1, 330 south and 660 west NEc SE SE 13-18-18; Phillips Petroleum Company, B. Brian 4, located 660 feet south and 450 feet west NEc NE SE 13-18-18; and Goodwin and Markwick, Union Sawmill Company 1, 330 south and 460 east NWc NW SE 9-17-13.

Louisiana Permits

Shreveport.—Twelve drilling permits were issued last week by the Louisiana Conservation Commission of which five were in North Louisiana in the following parishes: Bossier, one; Caddo; one; Caldwell, one; Morehouse, one; and Sabine, one. The seven in South Louisiana were in the following parishes: Calcasieu, one; Cameron, two; East Baton Rouge, one; Iberia, one; Iberville, one; and Plaquemines, one.

C. E. SAVAGE has been transferred temporarily from his post of chief scout of the eastern division of Carter Oil Company, Mattoon, Illinois, to a similar position at Tulsa headquarters. C. E. Wells, Wichita, who has been in the position for several weeks, is returning to that territory. R. B. Curran, chief scout at Tulsa, is doing special work in the marketing department at Tulsa.

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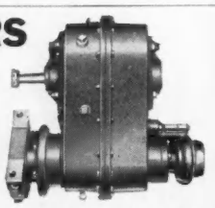

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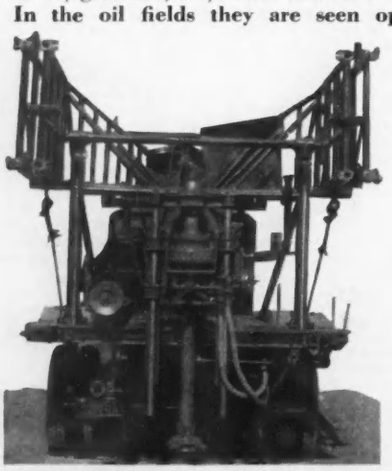

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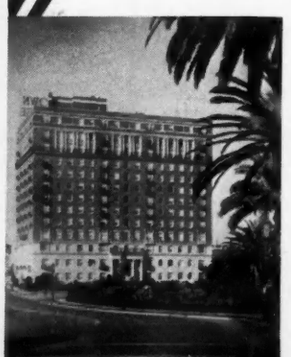

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New Mexico Fields

South Eunice completion flows 400 barrels hour

Hobbs, New Mexico.—Texas Pacific Coal & Oil Company's State 14, lease 2, C NW NE 11-22s-36e, southwest outpost for the lime area that lies immediately west of the Penrose sandy-lime field, Lea County, flowed 400 barrels of oil per hour natural. The prolific zone was topped at 3790 feet, or 250 feet sub sea, and drilling was halted at this level by the unusually large flow of oil and gas. The well is half mile west of the company's previous completion on the 640-acre lease, and is reported to be 20 feet lower on structure, although the production was found at a higher level. This productive lime area was uncovered last year. It is classed as the South Eunice field for proration purposes, but is several miles from the latter.

The granting of a 10,100 barrel production increase to prorated wells in Eddy and Lea counties effective March 1 is meeting with resistance from some purchasers and pipe line companies. The boost raised the top allowable for Eddy County's fields and the Maljamar field, Lea County, from 65 to 81 barrels daily, with the bulk of the hike going to an export outlet. Lea County's top allowable was boosted 5 barrels to 54 barrels daily, instead of 55 barrels as previously reported. The Vacuum field, which is responsible for one third of the active tests in Lea County, was cut to 60 percent of the allowable effective March 1 by The Texas-New Mexico Pipe Line Company, only outlet for the area. This company has been applying less stringent proration at intervals, owing to congestion of its transportation facilities, which also handle the export shipment from Eddy County.

The designation of an official name and the fixed boundaries of all producing areas in Lea and Eddy counties has been worked out through the efforts of the New Mexico Geological Society, field representatives of the commission and Umpire C. G. Staley. Eddy County has 9 fields and pools, while Lea County has 20. A map has been prepared, setting forth the area embraced by each.

Activity in Lea County declined to 5 new tests the past week, including a wildcat to be drilled by Fred Turner, Jr., et al on First National Bank of Lovington fee, C SW SW 30-14s-38e. Vacuum field's 3 contributions involved The Texas Company's State 2-S, C SW SW 35-17s-34e; Phillips Petroleum Company's State-Santa Fe 28, C NE SW 33-17s-35e, and Humble Oil & Refining Company's State 4-K, C NE SE 32-17s-35e. In the Mattix area, North Shore Corporation's Woolworth 3, SW SW NW 33-24s-37e, was drilling below surface pipe.

Continental Oil Company et al's Britt 2-B-10, C W½ NW SW 10-20s-37e, east edge test for the Monument field, drilled below the normal water level in registering an initial yield of 92 barrels of 32-gravity oil and 748 barrels of water, flowing with the aid of input gas. The saturated lime logged at 3950-62 feet, with an elevation of 3568 feet, was acidized with 1000 gallons.

New Mexico Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Newberry et al, Saunders 1, se se se 13-17s-27e	25	535
Lea County (Eunice)—		
Texas Co., State-Lieu 16-H, c ne sw 20-20s-37e	95	3850
Lea County (Langlie)—		
Italo Pet. Corp., Indian 1-B-5, nw ne ne 5-25s-37e	132	3556
Indian 2-B-5, ne se ne 5-25s-37e	250	3548
Lea County (Monument)—		
Continental et al, Britt 4-B-15, nw sw sw 15-20s-37e	360	3853
Britt 2-B-10, c w½ nw sw 10-20s-37e	92	3962
Shell, Foster 2, se sw se 34-19s-36e	225	3953
Lea County (Penrose)—		
Danglade & Clower, Glier 1-B, c se nw 33-22s-37e	96	3691
Lea County (Vacuum)—		
Magnolia, State 2-J, c nw se 22-17s-34e	128	4740
State-Bridges 25, c ne se 26-17s-34e	140	4749
Phillips, State-Santa Fe 25, c nw se 30-17s-35e	672	4667
Lea County (Wildcat)—		
Barnsdall, State-Humble 1, c ne se 33-16s-36e	*	5269

* Failures; † Junked; ¶ Million cu. ft. gas.

Marland-Finley field allowable is hiked

The Texas Railroad Commission has increased the allowable for wells in the Marland-Finley pool, Gray County, effective March 6. The order provides for an allowable of 8357 barrels which is to supply the Danciger Refinery in Gray County.

"The allowable production for the Marland-Finley pool in Gray County, Texas, comprising Sections 34, 35, 36, 37, 38, 14, 13 and 12 of Block 3, I&GN RR Survey, Gray County, Texas, and Sections 1, 2, 28, 29, 30, 31, 32, 33, 34, 57, and 58, of Block B-2, H&GN Survey, Gray County, Texas, be and the same is hereby set at 8357 barrels daily until further ordered by the commission."

Rocky Mountain States

Lance Creek outpost well plugs back to make pumper

Casper, Wyo.—Lance Creek field's eastern outpost well made a commercial producer in the Sundance sand this week after plugging back from the Leo horizon of the Minnelusa series where it tested water in the lower sections. Ohio Oil Company's Leo 1 OPC-7, NWc SE 35-36n-65w, which originally drilled to 5641 feet in the Leo sand and completed for 13 barrels of oil and 50 barrels of water daily. It was placed on pump this week and tested 190 barrels daily through casing perforations at 4308-4404 feet.

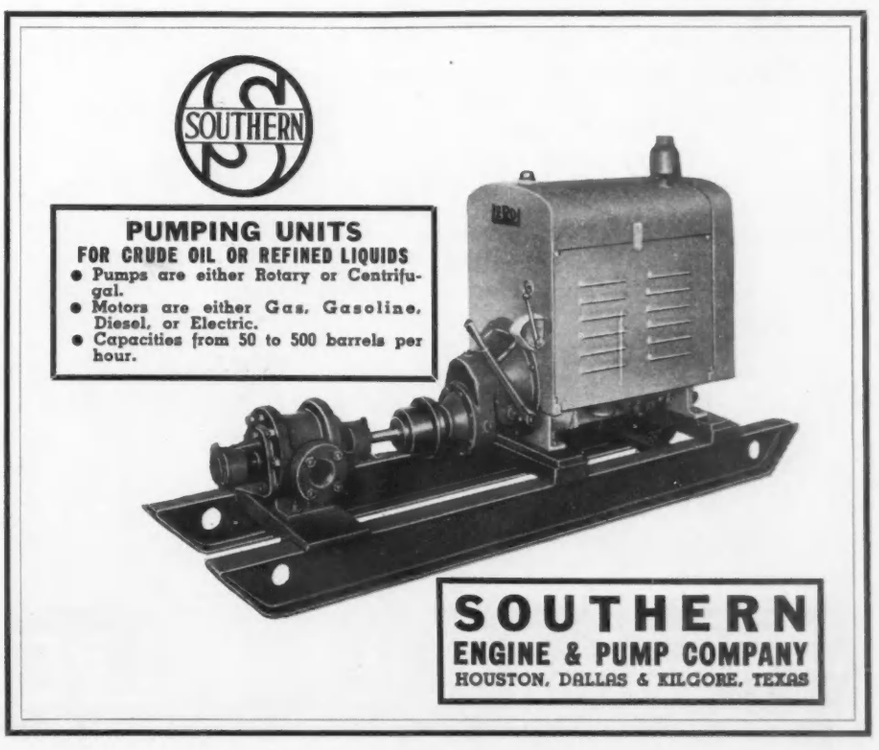
Continental Oil Company is moving in rotary to deepen Delahoyd 1, NE NE 25-37n-63w, an old Dakota well in the Ant Hills field, 12 miles northeast of the Lance Creek area.

In the Lance Creek field proper, 7

Mountain States Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
COLORADO		
Prowers County (Cottonwood)—		
Continental, Ruby 1, cne nw 31-21s-44w	*	5680
MONTANA		
Glacier County (Cut Bank)—		
Glacier Prod. Co., State 5, cnw nw 16-33n-5w	275	2905
Toole County (Kevin-Sunburst)—		
G & A Oil Co., Goeddertz 12, se ne sw 23-35n-3w	200	1680
Carbon County (Roscoe Dome)—		
R. C. Tarrant 2, se nw 4-6s-18e	*	3130
WYOMING		
Niobrara County (Lance Creek)—		
Adams O&G Co., Baker 1, nw ne sw 8-35n-65w	162	5636
Continental, Tom Bell 14, cnw sw 34-36n-65w	248	3976
Ohio, Converse Sheep Co., 8, nw ne sw 32-36n-65w	¶2¼ & 180	4994
(Young Woman Creek Structure)—		
Cow Gulch Oil Co., Magoon 1, ne ne sw 33-36n-64w	*	2153

* Failures; † Junked; ¶ Million cu. ft. gas.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FOR CRUDE OIL OR REFINED LIQUIDS
• Pumps are either Rotary or Centrifugal.
• Motors are either Gas, Gasoline, Diesel, or Electric.
• Capacities from 50 to 500 barrels per hour.
SOUTHERN
ENGINE & PUMP COMPANY
HOUSTON, DALLAS & KILGORE, TEXAS

wells are active while 1 location has not yet started work. A production test is being run on Ohio Oil Company's Agnes Rohlff 5, NW NE SW 32-36n-65w, which drilled to 3933 feet and has cemented 7-inch casing on top of the Basal Sundance at 3846 feet.

An old Sundance producer in the central sector of the field, Ohio Oil Company's Agnes Rohlff 3, CSE NE 32-36n-65w, is preparing to cement off the Sundance formation before drilling ahead from 3974 feet. Minnelusa Oil Corporation's Joss 2, NE SW 6-35n-65w, on the western slope of the field, is also preparing to deepen from 3989 feet in the Sundance to test the Minnelusa.

California Fields

Making test of oil show near Buttonwillow gas field

Los Angeles.—California Exploration Company is getting ready to make a production test in Salisbury 1, Section 7-29-24, less than 8 miles southeast of the Buttonwillow gas field in Kern County. It was reported that solid oil sand, identified as the Stevens, was cored from 11,560 to 11,602 feet, and the main body of that sand is expected to be around 11,700 feet. This wildcat is in an area where oil discovery has been anticipated since opening of gas production at Buttonwillow two years ago.

Either a new field has been opened or Mountain View has been extended south by completion of Standard Oil Company, Superior Oil Company and The Texas Company's Jewett 1, Section 16-31-29, Kern County, which flowed 2988 barrels of 31.5-gravity oil on potential test from 6270 feet. Superior Oil Company has made location for Jewett 1, NEc 16-31-29.

California Completions

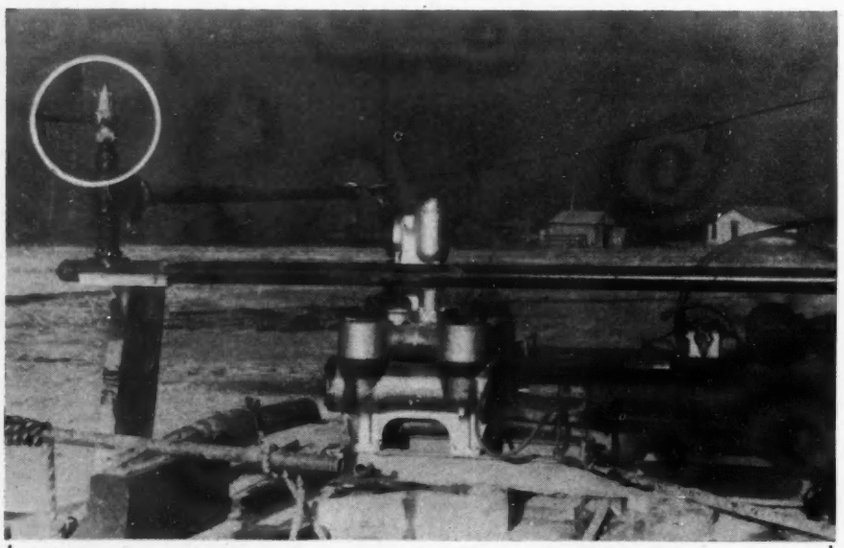
LOS ANGELES COUNTY

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens-Rosecrans—		
Superior, Maxwell Comm. 12, 1477 ft s and 80 ft w of C/Ls Rosecrans and Main	345	8852
Montebello—		
Union, Paul Howard 4, 200 ft s and 115 ft w from nec lot 193; or 460 ft n and 825 ft w from C/Ls Beverly and Montebello Avenue	686	6694
Torrance—		
Alford Dev. Co., Bell 31, 190 ft s and 46 ft w of C/Ls 235th St. and Walnut	170	5122
D. W. Elliott, Kettler 10, 155 ft n and 160 ft e of C/Ls 237th St and Walnut	660	5147
Kern Pet. Co., Neher 1, 116 ft n and 403 ft w of C/Ls 236th St. and Eshelman	200	5120
L.M.S. Oil Co., Kettler A-1, 85 ft s and 60 ft e of C/Ls 237th St. and Walnut	2000	5160
J. E. Pettijohn, Adele Oil Co. 1, 225 ft n and 145 ft w of C/Ls 240th St. and Walnut	675	5160
Plymouth Oil Co., Plymouth 2, 215 ft s and 385 ft w of C/Ls 236th St. and Eshelman	217	5158
Wilmington—		
Union Pacific, U. P. (LB) 102, 934 ft s on C/L Ford from C/L Anaheim; thence 4826 e at R/A	167	3160
Universal Consolidated, Newport (LB) 7, 198 ft n on e line of e parcel from sec; thence 16 ft w at R/A	750	4200
ORANGE COUNTY		
Huntington Beach—		
Wilshire Oil Co., H. B. 15, 34 ft n and 108 ft e from swc Block 118	300	5403
Seal Beach—		
Continental, Bixby 41, 5 ft s and 321 ft e of nwc of sec 11-5-12	447	5300
KERN COUNTY		
Belridge—		
Belridge Oil Co., No. 2, 250 ft s and 910 ft w of nec of sec 28-27-20	920	8588
Canal—		
Ohio, KCL E-10, 1645 ft n and 2306 ft w of sec of sec 14-30-25	1022	8485
Kern River—		
D.B.K. Co., No. 1, 330 ft s and 110 ft e of nwc of sec 34-28-28	4	466
Helm & Smith, H&S 12, 995 ft n and 750 ft e of swc of sec 34-28-28	6	670
Kings County (Kettleman North Dome)—		
K.N.D.A., No. 6-16Q, 990 ft s and 330 ft e of w¼c sec 16-22-18	4540	8185
Ventura County (Shiells Canyon Area)—		
El Rancho Oil Co., Elkins 2, 297 ft s and 589 ft w of n¼c sec 23-24-27	160	3158
Tulare County (Richgrove Area)—		
Amalgamated Oil & Gas Co., Konda 5, 150 ft n and 660 ft w of e¼c sec 23-24-27 (W)	*	1912
Santa Barbara County (Bicknel Area)—		
Hogan Pet. Co., Zabala Core Hole 3, 5875 ft w on n property line from nec; thence 142 ft s at R/A	*	1200

*Failures; †Junked; ‡Million cu. ft. gas.

Seek permit to extend Oklahoma water flooding

Tulsa.—Forest Producing Corporation, pioneer water flood operator of the Mid-Continent, has made application to Oklahoma Corporation Commission for an extension to its present development program. The new unit is centered in Sections 12 and 13-26n-16e, Nowata County, and comprises approximately 340 acres. Present production is averaging less than one half barrel per day from Bartlesville sand at about 580 feet.



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Michigan Fields

Two new shallow pools opened in Van Buren County.

Bay County deep test finds free oil in Sylvania sandstone.

Mt. Pleasant, Mich.—Two new shallow pools, one producing at 1008 feet, and both in Van Buren County, were opened this week while the chief interest in the central part of the Michigan basin centered on Gulf Refining Company's deep test in Bay County.

Gulf Refining Company's Bateson 1, SE SE 2-14n-4e, logged enough free oil in the Sylvania sandstone at 3995 feet to warrant a production test. The Sylvania sand has shown oil-gas saturation on a number of isolated tests located in the center of the basin but is not being produced commercially in the state. Sylvania was topped at 3945 feet and at 3990-95 feet the hole filled with 1600 feet of fluid. Twenty-six barrels of oil was bailed but the following day a 6-hour swab test brought about 200 barrels of water. Drilling has been suspended for an attempt to shut off the water with a chemical seal. If this fails, plan is to run tubing with packer. The hole already has established a fair production zone at 3530-50 feet in Monroe limestone, where output was estimated between 90 and 140 barrels following acid and shot. This formation is producing now from 10 to 15 barrels between the 7- and 10-inch casing. The test is wildcat insofar as the Monroe, Sylvania and any deeper formations which may be tested. However, it is just south of two Dundee lime producers, developed last year.

Clapsaddle & Harris' Been 1, NW NW NE 24-1s-15w, Columbia Township, Van Buren County, initialed 415 barrels natural at 1163 feet to open a new pool or provide the older Columbia pool, 2 miles northwest, with a good extension. Been 1 is producing from Traverse topped at 1151 feet. Bulk of the acreage in the Columbia area is split between small operators.

Shallow Production

Bangor Township, Van Buren County, was definitely in the Southwestern Michigan drilling picture this week, as Blood & Hendershott's Jackson 1, NE NE NE 29-2s-16w, responded to swabbing and started flowing at the rate of 146 barrels per day natural at 1008 feet. It is the shallowest commercial producer in Michigan with the exception of several wells drilled about 20 years ago in Eastern Michigan near Port Huron, where small production was found at 450 to 700 feet in the Dundee. Seven locations have been made within a radius of a mile of the Bangor discovery and considerable activity is now forecast. The well has produced as high as 370 barrels in a 24-hour period.

Development in both the Hopkins, Allegan County, and Walker, Kent County, pools, each opened this year, is expected to step up as a result of offset completions which appear to confirm a favorable area for drilling. Non-conforming structures, sharp dips, cross folds and a now accepted condition of coral reefing has combined to leave a discovery well anybody's guess as to what it may prove as a forerunner of a pool in Southwestern Michigan. The Bloomingdale pool covers 1100 acres while other pools which looked equally as promising from the discovery cover less than 200 acres. Two dry holes were drilled offsetting the New Salem discovery, Allegan County.

Major interest was focused this week on Michigan Devonian Petroleum Company's DeKock 1, Section 22-5n-13w, Jamestown Township, Ottawa County, due to favorable seismograph logging of the location. However, operators held little hope of establishing production in the Traverse, objective formation. The lime was topped at 1807-13 feet and at 1824 feet no shows had been tested.

In the same county Voorhees Drilling Company has shut down at 3988 feet at Reible 1, Section 36-7n-16w, Grand Haven Township, the second test this year to drill out the Trenton limestone. This formation was logged between 3790 and 3840 feet. No oil or gas saturation was logged and abandonment is expected.

Michigan Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Muskegon Development, Dykhuis 1, ne se ne 15-4n-15w	*	1602
Fortney Oil Co., Wessleing 10, ne se ne 1-3n-14w	lcn.	abd.
Stewart Oil Co., Lampen A1, ne ne nw 27-4n-14w	240	1467
American, Slindger 2, ne se nw 11-4n-13w	35	1608
Chapman Oil Co., Gardner 1, sw ne se 23-3n-11w	*	1796
Sprenger Bros., Schafer 1, ne ne sw 14-3n-13w	13	1737
Crown Dev., Nyhuis 2, se sw se 22-4n-14w	*	1468
Bay County—		
J. V. Wicklund, Arnold 1, c ne se 10-14n-4e	*	3002
Berrien County—		
Bloomingdale Dev., Tabor 1, nw nw se 33-5s-17w	*	175
Clare County—		
Pure, State A1, c ne nw 33-19n-6w	560	3876
Isabella County—		
Cryden et al, Caple 1, se se se 18-16n-3w	*	1558
Cities Service, McNerney 1, se sw sw 21-16n-3w	157	3686
Kent County—		
A. M. Henry, Slykhouse 1, ne sw se 32-7n-12w	30	1850
Wolverine Nat. Gas Co., Orlik 1, nw ne nw 5-6n-12w	390	1881
Ottawa County—		
Gordon Oil Co., Ohler 1, nw nw ne 11-6n-13w	*	1945
Van Buren County—		
Blood & Hendershott, Jackson 1, ne ne ne 29-2s-16w	146	1008
Schutz & Prathers, Joy 1, sw sw se 5-1s-14w	*	1245
Ralph LaBlanc, Melvin 1, ne sw se 8-1s-14w	*	1242
M. H. Bauman, Rogers 1, nw sw sw 8-1s-14w	250	1236
Clark & Johnson, Maier 3, 14-1s-14w	260	1310
Fisher & McCalls, Wiggins C2, ne nw nw 16-1s-14w	150	1209
Wiser Oil Co., Boyer 6, sw nw ne 17-1s-14w	525	1231
Boyer 7, ne se nw 17-1s-14w	610	1235
Fred J. White, Florian 1, sw nw sw 5-1s-15w	*	1185
DeVries, Taylor 1, sw sw sw 19-1s-15w	*	1150
Clapsaddle et al, Been 1, nw nw ne 24-1s-15w	415	1163

*Failures; †Junked; ¶Million cu. ft. gas.

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WILDCAT REPORT
New Starts and Completions

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Alabama	...	1	...	1	...	...	...	...	...	1
Arkansas	...	6	...	5	...	...	...	...	...	5
California	4	51	2	22	...	8	...	...	2	14
Colorado	...	...	1	1	...	...	...	...	1	1
Illinois	13	85	8	40	...	3	...	...	8	37
Indiana	1	7	1	1	...	...	...	...	1	1
Kansas	2	29	5	31	3	12	...	...	2	19
Kentucky	1	2	...	3	...	2	...	...	...	1
Louisiana	...	23	...	20	...	4	...	...	...	16
North Louisiana	...	9	...	6	...	1	...	...	...	5
South Louisiana	...	14	...	14	...	3	...	...	...	11
Michigan	3	36	8	62	2	5	...	...	6	57
Mississippi	...	1	...	1	...	...	...	...	...	1
Missouri	...	1	...	...	...	...	...	...	...	...
Montana	...	1	...	...	...	...	...	...	...	...
New Mexico	1	7	2	3	1	2	...	...	1	1
New York	...	...	...	2	...	...	...	1	...	1
Oklahoma	2	33	3	31	...	4	1	2	2	25
Ohio	...	...	3	...	1	...	...	...	2	2
South Dakota	...	1	...	...	...	...	...	...	...	...
Texas	13	175	19	182	1	19	...	1	18	162
East Texas	2	20	1	10	...	...	...	...	1	10
North Texas	2	12	5	47	1	11	...	1	4	35
Gulf Coast	4	24	2	15	...	1	...	...	2	14
Panhandle	...	2	...	1	...	...	...	...	...	1
South Texas	4	77	9	79	...	6	...	...	9	73
West Texas	1	40	2	30	...	1	...	...	2	29
Wyoming	...	1	1	1	...	...	...	...	1	1
Total U. S.	40	459	53	402	8	61	1	4	44	337

ARKANSAS

FIRST REPORTS

Clay County—A. L. Ginther's Gordon 1, 116 ft w and 120 ft n sec se ne 22-19n-7e, moving in materials.

CALIFORNIA

FIRST REPORTS

Kern County—Superior Oil Co.'s Jewett 1, 1650 ft s and 990 ft w of nec 16-31-29, grade. Raymond D. Herzog's No. 1, 500 ft s and 500 ft w of nec se 27-25-18, dr 612 ft.

Fresno County—Roco Oil Co.'s Lindbloom 1, 150 ft n and 150 ft w c of sec 3-20-14, rur.

Ventura County—Renard Oil Co.'s No. 1, 1660 ft n and 25 ft e of swc of sec 6-4-19, lcn (formerly called Anderson, Neil Roy, No. 1).

COMPLETIONS

Tulare County—Amalgamated Oil & Gas Co.'s Konda 5, 150 ft n and 660 ft w of e¼c sec 23-24-27, abnd in slate, top 1910 ft, bottom 1912 ft, portable rig.

Santa Barbara County—Hogan Petroleum Co.'s Zabala Core Hole 3, 5875 ft w on n property line from nec, thence 142 ft s at R/A, elev 829 ft, abnd 1200 ft.

COLORADO

COMPLETIONS

Routt County—Continental Oil Co.'s Rosabelle Ruby 1, cne nw 31-21s-44w, top Arbuckle 5564 ft, abnd 5680 ft.

ILLINOIS

FIRST REPORTS

Adams County—W. R. Wilson et al's Adams 1, nw sw nw 28-2n-7w, rig.

Bond County—R. C. Martin et al's Willeford 1, se ne se 10-5n-4w, dk.

Clark County—Phillips & Kost's Shuey 1, se se 31-12n-14w, sd 130 ft.

Clay County—Kingwood Oil Co. and Continental Oil Co.'s Van Dyke 1, se se sw 11-5n-6e, dr.

Coles County—T. S. Ingram's Wilson 1, c ne sw 4-13n-14w, dr.

Effingham County—Whisenant & Trenchard's Henry Betram 1, nw nw 23-8n-6e, moving in materials. Kingwood Oil Co.'s J. Casey 1, nw nw nw 27-6n-4e, loc.

Franklin County — M. G. Drilling Co.'s Franklin County Realty Co. 1, ne ne se 26-6s-3e, surface casing set at 101 ft.

Saline County—Kingwood Oil Co.'s McIntyre 1, nw nw nw 25-9s-7e, loc.

Shelby County—D. J. Marshall et al's Riley 1, c ne ne 9-11n-4e, dk.

Wabash County—Tidewater Associated Oil Co.'s Cowling 1, sw sw se 18-2s-13w, loc.

Washington County — Thompson Drilling Co.'s Rosanski 1, nw nw sw 19-3s-1w, moving in core drill.

White County — Leggett Drilling Co.'s (Thomas, Shirley et al's) Matilda Hon 1, nw se 32-3s-11e, Phillips tnp., moving in materials.

COMPLETIONS

Cumberland County—Jarvis' Bros., Wilson Estate 1, ne nw nw 21-10n-7e, Neoga tnp, top Bethel 2130 ft, top McClosky 2278 ft, abnd 2326 ft.

Fulton County—Independent Producers & Refiners' Bernhard 1, sw nw nw 12-7n-1e, Lee tnp., Top Devonian 670 ft, abnd 755 ft.

Lawrence County—R. E. Longeran's Fisher & Tewault 1, c se ne 12-4n-11w, Russell tnp, top Buchanan 1073 ft, salt water, abnd 1125 ft.

Madison County—Harry Hazelett's Wetzel 1, sw sw se 12-5n-6w, Alhambra tnp, top Devonian 1856 ft, salt water after shot, abnd 1916 ft.

Montgomery County—W. O. Allen's (Mott Drilling Co.'s) Ward 1, nw nw ne 23-12n-5w, Bois D'Arc tnp, top Trenton 2307 ft, abnd.

Shelby County—Joe Aylewarď's E. E. Bickford 1, nw sw se 7-9n-5e, Prairie tnp, top Benoist 1948 ft, abnd 1956 ft.

Washington County — Smith's Geo. Marquard 1, ne sw sw 33-1s-5w, Venedy tnp, top Benoist 956 ft, abnd 1026 ft. Taylor Drilling Co.'s (Hutchins'), Welhe 1, ne se nw 35-2s-3w, Nashville tnp, top McClosky 1605 ft, abnd 1625 ft.

INDIANA

FIRST REPORTS

Gibson County—C. M. Lane's Dr. McCarty 1, nw 13-2s-11w, 1 mi southwest of Princeton, moving in materials.

COMPLETIONS

Spencer County — James Leggett Drilling Co.'s (Neff's), O. Deeg 1, ne ne nw 32-7s-7w, top McClosky 1721 ft, sulphur water, abnd 1776 ft.

KANSAS

FIRST REPORTS

Butler County—Carlock et al's Hartenbower 1, nwc 16-29-6e, rig. Simpson Oil et al's Evans 1, c sl sw 21-2-7e, machine.

COMPLETIONS

Ellis County—Darby Petroleum Corp.'s Peavey "C" 1, nwc ne 24-11n-18w, 1 mi n Marshall pool, top Lansing 3145 ft, top Simpson sh 3417 ft, top Simpson sd 3422 ft, top Arbuckle 3425 ft, td 3439 ft, acidized 4700 gals, completed, 1367 bbls.

Graham County — Continental Oil Co.'s Drumm Commission Co. 1, sec ne 16-9-21w, 1½ mi w Morel pool, top anhydrite 1661 ft, top Topeka 3150 ft, top Lansing 3390 ft, top Conglomerate 3675 ft, top Arbuckle 3679 ft, td 3702 ft, acidized with 1000 gals, completed, 1043 bbls, gr. 27.

Greenwood County—Hancock et al's Rousch 1, c s½ se nw 8-28-13e, 3 mi w Fall River gas pool, top Mississippi 1490 ft, abnd 1530 ft.

Marion County — Vickers Petroleum Co.'s Sutphin 1, sw se sw 30-22-4e, 3 mi sw Peabody pool, top Lansing 1860 ft, top Chat 2487 ft, abnd 2643 ft.

Russell County—Shields' Gross 1-A, c sl sw se 5-15-13w, 1 mi ne Coralena pool, top anhydrite 698 ft, top Topeka 2630 ft, top Dodge 2878 ft, top Lansing 2929 ft to 2976 ft, pb 2900 ft, perforated 60 shots 2870-2886 ft, acidized 2000 gals, completed, 603 bbls, gr 38.

KENTUCKY

FIRST REPORTS

Hopkins County — Snowden & McSweeney and Cumberland Oil Co.'s Bailey Whitsell 1, 4 mi northeast of Madisonville, to drill to McClosky, moving in materials.

MICHIGAN

FIRST REPORTS

Newaygo County—J. P. O'Neil's Eichenberg 1, sw ne 12-16n-12w, rig.

Ottawa County—Gordon et al's Berg 1, nw ne ne 13-7n-16w, dr. R. C. Lentz's State Bank 1, nw ne ne 9-7n-13w, dr.

COMPLETIONS

Allegan County — Muskegon Development Co.'s Dykhus 1, Fillmore twp., ne se ne 15-4n-15w, Traverse lime 1581 ft, sw 1600 ft, abnd 1602 ft. Chapman Oil Co.'s Gardner 1, Wayland twp., sw ne se 23-3n-11w, Traverse lime 1755 ft, abnd 1796 ft.

Bay County—J. V. Wicklund Dev. Co.'s Arnold 1, ne se Monitor twp., 10-14n-4e, abnd 3002 ft.

Berrien County—Bloomingdale Dev.'s Tabor 1, Pipestone twp., nw nw se 33-5s-17w, abnd 175 ft.

Ottawa County—Gordon & Wagner, Tr.'s Ohler 1, Georgetown twp., nw nw ne 11-6n-13w, Traverse 1845 ft, abnd 1945 ft.

Van Buren County—Blood & Hendershott's Jackson 1, Bangor twp., ne ne ne 29-2s-16w, Traverse 1002 ft, pay 1003-05-08 ft, td 1008 ft, initial swab and flow production 146 barrels, trace of water. Fred J. White's Florian 1, Columbia twp., sw nw sw 5-1s-15w, Traverse 1149 ft, sw 1156 ft, abnd 1185 ft. Q. DeVries & Boves' Taylor 1, sw sw sw 19-1s-15w, abnd 1150 ft. Clapsaddle & Harris' Been 1, nw nw ne 24-1s-15w, Traverse 1151 ft, oil saturation 1162 ft, td 1163 ft, initial production 415 barrels, new pool or two mile extension of Columbia pool.

NEW MEXICO

FIRST REPORTS

Lea County—Fred Turner, Jr. et al's First Nat'l Bank (Lovington) 1, c sw sw 30-14s-38e, mim.

COMPLETIONS

Lea County — Barnsdall Oil Co.'s State-Humble 1, c ne se 33-16s-36e, elev 3902 ft, top anhydrite 2077 ft, base salt 3000 ft, top Yates 3170 ft, top brown lime 3360 ft, used acid at 4978 ft and 5269 ft, abnd.

Eddy County—Martin Yates et al's Yates 1, c nw sw 6-18s-30e, elev 3552 ft, salt series 425-1123 ft, top Yates 1285 ft, pay 2808-74 ft, shot 140 qts nitro and flowed 420 bbls oil 18 hrs. via cas.

OKLAHOMA

FIRST REPORTS

McIntosh County—Scruggs et al's Lanning 1, se sw sw 19-12n-15e, dr.

Muskogee County—Petroleum Grubstakers' Scott 1, se sw sw 14-13n-19e, machine.

COMPLETIONS

Cleveland County — English Drilling Co.'s Rice 1, c ne ne 3-10n-2w, 2 mi n Moore pool, abnd 1400 ft.

Muskogee County—Clants' Jennings 1, nwc ne 6-13n-19e, 6 mi s Jolly-Patton pool, abnd 1100 ft.

Payne County—Starr Oil & Gas Co.'s Georgia 1, se sw ne 35-18n-4e, 1½ mi s Broyles pool, top Oswego 3142 ft, top Bartlesville 3543 ft, top Mississippi 3810 ft, top Woodford 3945 ft, top Misener 3982 ft, top Sylvan 3983 ft, top Viola 4010 ft, top 1st Wilcox 4051 ft, top second Wilcox 4083 ft, td 4123 ft, pb 3494 ft, perforated Prue 12 shots 3296-3338 ft, completed 1,880,000 cu. ft. gas.

EAST TEXAS

FIRST REPORTS

Henderson County—A. J. Tyler, Chas. Clinton & Richards-Holloway's Rowe - Baker (Amerada) 1, 1160 ft fr w and 150 ft fr s lines of 50-acre lse and J. T. Childers sur, mim.

Upshur County — Brown - Gardner & Higginbotham's J. J. Crawford 1, 150 ft out of sec of 200-ac tr, T. Jackson-J. Thomas sur,

1½ mi n Gilmore, elev 347 ft, cem sur pipe 102 ft.

COMPLETIONS

Trinity County—Taubert & McKee's Freedman 1, 330 ft out of swc 70-acre tr, M. L. Story sur, top Crockett 620 ft, top Sparta 996 ft, top Weches 1242 ft, top Queen City 1465 ft, top Recklaw 1585 ft, top Carrizo 1780 ft, top Wilcox 1930 ft, abnd 2066 ft.

WEST TEXAS

FIRST REPORTS

Pecos County—Anderson-Prichard Oil Corp. et al's J. S. Masterson 1, c s¼ of n¼ H&GN sec 104, blk 10, mim for Ordovician test. Culbertson & Irwin, Inc.'s Ed. Fromme 1, 330 ft fr ne and 330 ft fr se lines of w¼ H&GN sec 106, blk 10, machine.

COMPLETIONS

Pecos County—Jas. L. Greene et al's Iowa Realty Trust 1, 2490 ft fr ne and 2490 ft fr nw lines H&GN sec 139, blk 10, elev 2444 ft, top anhydrite 340 ft, top Yates 855 ft, sul w 1385-90 ft, abnd 1392 ft. O. E. Schkade et al's Neville 1, 330 ft s and w of sec H&GN sec 10, blk 12, but in GC&SF sec 72, blk 194, elev 2297 ft, trace oil 960-81 ft and 1325-35 ft, sul w 1745-55 ft and 2465-67 ft, abnd 2558 ft.

NORTH TEXAS

FIRST REPORTS

Clay County—Bridwell Oil Co.'s Furd Halsell 1, 920 ft s and 3292 ft e of John Rogers sur, but in blk 16, W. C. Ry. sur A-976, mim.

Haskell County—Amerada Pet. Corp.'s C. J. Kleiner 1, 660 ft out of nec of J. M. Cass sur 157, 7 mi e Haskell, mim for 5500-ft test.

COMPLETIONS

Archer County—Bridwell Oil Co.'s W. C. Jones 1, 800 ft fr s and 1200 ft fr e lines sec 23, blk 5, Clark-Plumb sur, abd 1163 ft. Oil Investment Co.-Gulf 31-B, 460 ft fr e and 475 ft fr s lines lot 2, blk 125, Harris subdiv. of Club Ranch, top broken Palo Pinto lime 3345 ft, minor oil saturation with salt taste 3806-17 ft, abnd in lime and shale 4480 ft. Louis Sikes et al's M. M. Martin 1, 330 ft out of swc Wm. Shaw sur, A-378, top Bend 5135 ft, top Caddo 5230 ft, top Ellenberger 5690 ft, abnd 5790 ft.

Young County—R. R. Brader & O. Groves' Sally Clark 1, 100 ft s and 1760 ft w of M/E/NEc of C. Newhaus Sur A-1914 and E. L. Ry. Sur. A-1307 ft, sandy-lime pay 3850-65 ft, shale to 3875 ft, shot 10 qts nitro 3857-65 ft, pumped 43 bbls initial. E. D. Willis et al's G. P. Stewart 1-B, 1631 ft fr n and 1257 ft fr e lines sec 1493, TE&L Co. sur, trace oil 695-700 ft, abnd 955 ft.

SOUTH TEXAS

FIRST REPORTS

Duval County—Transwestern Oil Company's Duval County Ranch Co. 19 (368), 330 ft n line, 330 ft w line, Section 368, lcn.

Guadalupe County—J. A. Holifield et al's Claude Broadnax 2, 300 ft nw line, 1000 ft ne line, 90-ac lse, J. G. King survey, lcn.

McMullen County—V. G. Schimmel et al's E. R. Hagist 2, 990 ft n line and 330 ft w of sw cor n½ e½ BS&F survey 123, Ab-127, lcn.

Medina County—F. J. Carle's Ewin Bendle 1, 900 ft most w'ly w line, 1050 ft most n'ly s line of 321-ac tr, J. Barnhart sur 593, lcn.

COMPLETIONS

Bee County—Rodney DeLange, B. F. Voss 1, 330 ft ne line and 330 ft nw line of tr and Samuel May sur, abnd 4036 ft.

Guadalupe County—R. G. Williams Oil Co.'s C. Weber 1, 4750 ft se line, 850 ft sw line, G. Torres survey, 2½ mi se Marion, top Eagleford 19390 ft, top Buda 1305 ft, top Del Rio 1360 ft, top Georgetown 1411 ft, top Edwards limestone 1452 ft, abnd 1433 ft.

Jim Wells County—H. H. Howell, Wright 1, 330 ft s line and 330 ft w line of a 2100-ac lse, Ross M. Bridges sur No. 14, 5½ in csg at 6790 ft, sand 6640-6710 ft, salt water 6500-6600 ft, abnd 6796 ft.

Karnes County—Ike Howeth, W. J. Porter 1, 330 ft n line and 330 ft e line of 80-ac lse, Ramon Musquiz sur, top Pettus 4251 ft, abnd 4303 ft.

McMullen County — C. C. Schumway & Charles H. Burns, Shiner Ranch 1, 330 ft s line and 330 ft e line ne quarter, section 21, C. C. Schumway subd, top Mirando 1673 ft, abnd 1725 ft

Medina County—Clopton & Mitchell, Mrs. T. A. Wilson 1, 750 ft s line, 5500 ft w line of W. P. Scott sur No. 509, top Navarro abnd 2005 ft.

Starr County—Billstrom & Bone, Y. Garcia de Garcia 1, center n 10 acres of sw 29.21 acres Richard lse, share 7-B, por 71, J. de Mier, abnd 1203 ft. A. E. Henninger, H. P. Guerra, 3353 ft ne line, 227 ft se line 160-ac tr, por 56, Jurisdiction de Mier grant, abnd 1205 ft. W. W. Zimmerman, M. S. de Tijerna 1, 320 ft ne line, 320 ft nw line of blk 30, Arthur Bedtelijon subd, tr 9, sur 299, Sand 830-834 ft. Abnd 1360 ft.

TEXAS GULF COAST

FIRST REPORTS

Harris County — Midwest Royalty Co.'s Westmoreland Dev. Co. 1, Bellaire prospect, center of lot 14, block 39 of the Westmoreland Farms 3rd addition in J. Wells sur, lcn.

Matagorda County—Pierce Estate's Fee 1, Podo area, 1000 ft e of GH&SA RR tracks and 5100 ft sw of nec of B. Rawls and O. H. Stout sur, lcn.

Tyler County—J. C. Bonham's Southwestern Lbr. Co. 2, Rockland area, 2750 ft e w lin and 150 ft n of s line of F. G. McReynolds sur, lcn.

Wharton County—Humble's J. D. Ecker 1, w of Danevang, 466 ft fr s line and 466 ft fr w line of BS&F No. 7, lcn.

COMPLETIONS

Brazoria County — Humble's Anderson 1, Anchor area, 466 ft n of s line and 466 ft e of w line of 241-acre tract, S. Marsh survey, topped Frio 8870 ft, abnd 10,033 ft.

Wharton County — Helmerich & Payne's Myatt 1, w of Danevang, center of the sw¼ of se¼ of section 99 of E. T. R. R. sur, abnd 6515 ft.

WYOMING

COMPLETIONS

Niobrara County—Cow Gulch Oil Co.'s William Magoon 1, ne ne sw 33-36n-64w, top Morrison 510 ft, top red beds 808 ft, top grey lime marker 1110 ft, Minnekahta 1280-1315 ft, Opeche Red Shale 1315-88 ft, Converse 1388-95 ft, Leo 2033-75 ft, top Bell 2143 ft, abnd 2153 ft.

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NOTICE IS HEREBY GIVEN that there will be a meeting of the State Mineral Lease Commission of Mississippi in the office of the Governor of said state, at Jackson, at ten o'clock A.M. on Thursday, March 23, 1939.

At this meeting the Commission will receive bids for the leasing of the Mississippi Sound and other tidal lands on the Mississippi Coast, estimated as being more than 500,000 acres, for oil, gas and other mineral exploration and development. Any and all parties desiring to submit bids may receive copy of terms, requirements and specifications by writing the undersigned.

MISSISSIPPI STATE MINERAL LEASE COMMISSION

Greek L. Rice, Attorney General, Secretary.

Jackson, Mississippi

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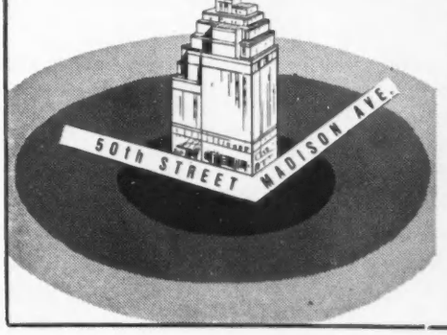

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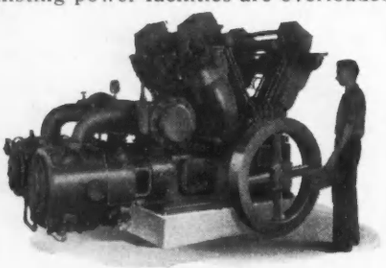
NOTES FOR THE Equipment Buyer and User

Diesel Engine Driven Compressor

INGERSOLL-RAND COMPANY

Ingersoll-Rand Company, Phillipsburg, New Jersey, announces a new heavy-duty Diesel-engine-driven compressor, known as the "XVO." The machine is suitable for use in independent or isolated compressor plants, or when existing power facilities are overloaded.



Ingersoll-Rand Heavy-Duty Compressor, Type "XVO"

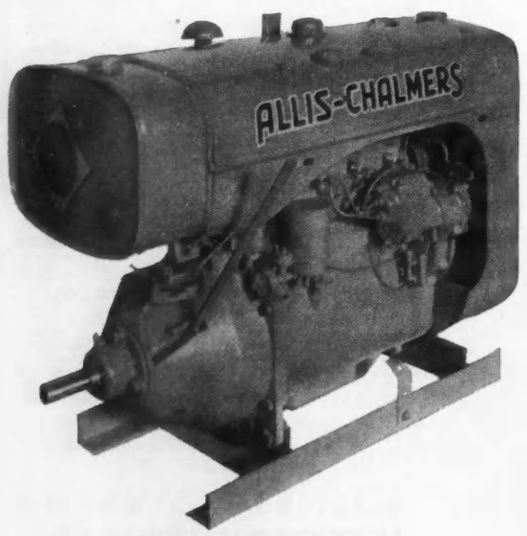
The equipment is entirely new in design and combines a horizontal heavy-duty double-acting compressor with a heavy-duty "V" type four-cycle Diesel engine in a single compact and lightweight unit, operating at moderate speed.

Sizes are available for actual-free air delivery ratings of 625, 935, and 1250 cfm for 100 pounds sea-level compression. In addition, a wide variety of air, gas, and ammonia compressing cylinders is available for pressures ranging from vacuum to 5000 pounds per square inch and higher.

Engine

FRED E. COOPER

Fred E. Cooper, oil field representative, Tulsa, announces a new Allis-Chalmers power engine — Model B — particularly adapted to small type oil field power applications. It has 74 foot-pounds torque at 1100 r.p.m., with four cylinders, 3¼-inch bore, 3½-inch stroke, and piston displacement of 116 cubic inches; this engine features the same removable sleeves that have proved so successful on the larger sizes of Allis-Chalmers engines. Reboring is eliminated. Lubrication under pressure to all working parts. Water circulation is secured by high velocity pump. Equipment includes carburetor, oil-wash air cleaner, high-tension magneto and dry disc clutch, and engine comes complete with radiator, fan, hood and side plates; available to burn gasoline or gas.

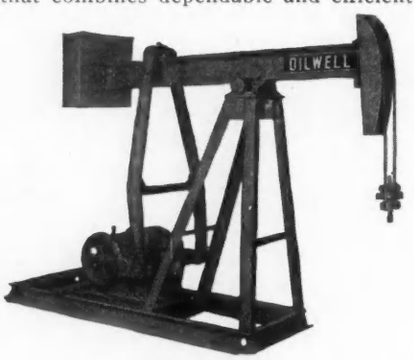


Allis-Chalmers Model B

Twin-Crank Unit

OIL WELL SUPPLY COMPANY

The new "Oilwell" TC-5 Pumping Unit has been developed by Oil Well Supply Company as a shallow-well unit that combines dependable and efficient performance with low installed cost. It is a portable, self-contained, twin-crank unit of 5000 pounds polished-rod capacity. Stroke lengths are 16, 18, 20½ and 24 inches. Peak torque capacity at 20 s.p.m. is 22,500 inch/pounds.



"Oilwell" TC-5

Of particular interest is the structural-steel frame, consisting of a rigid, widespread base and a high samson post of the four-leg, derrick type, a construction usually found in pumping units designed for heavy-duty service. The base is of rectangular shape and is without overhang at the sides. Universal slide rails facilitate mounting various types of prime movers on the base. An arc-type hanger assures straight polished-rod lift.

The speed reducer is equipped with single-helical, double-reduction gears providing a ratio of 32:1, which facilitates the use of low-priced, high-speed prime movers. All speed reducer shafts rotate in tapered roller bearings; crank pins are equipped with self - aligning, spherical roller bearings; and the upper pitman and saddle bearings are bronze-bushed. Oil seals retain lubricant in all bearings.

The TC-5 Pumping Unit is described in "Oilwell" Bulletin No. 180

Wire-Rope Clamp

THE BUCK CLAMP COMPANY

The Buck Clamp Company, 1306 Caroline Street, Houston, Texas, is offering a new heavy-duty forged-steel single-bolt hinged wire-rope clamp.

Buck Wire-Rope Clamp

Both hinged sections are broad and grooved to conform to lay of line. This large nested contact provides maximum gripping area and minimizes tendency of lines to crush or kink, and its design and strength makes it particularly adaptable for use on dead ends of rotary lines, the maker states. The clamp is sold through supply stores.

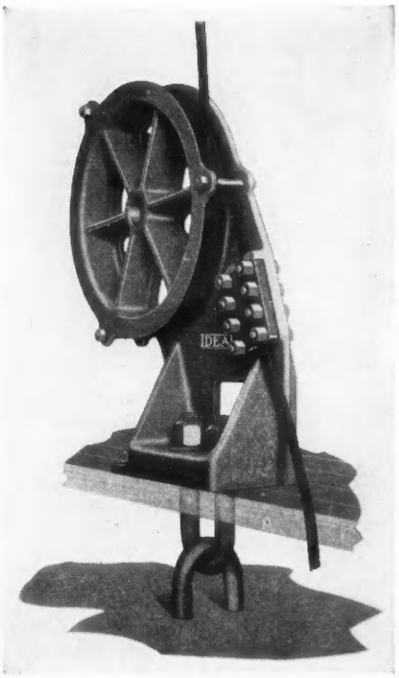
Dead End Tie-Down Attachment

THE NATIONAL SUPPLY COMPANY

The Ideal Dead End Tie-Down Attachment is a line-saving device recently developed by The National Supply Company to meet the need for a safe and economical means of anchoring the dead end of the drilling line in the derrick. It has proven to be very satisfactory in doing away with damage to the line, such as often caused by sharp bends and numerous small rope clamps used at the anchorage, according to the manufacturer.

The end of the wire line is given 2 or 3 turns around the 24-inch diameter cast steel drum and held securely with the bronze form-fitting clamp. This gives a coil brake effect, with the result that only a fraction of the full line tension is transmitted to the clamp. The surplus line remains on the spool or storage reel in the usual manner. By

NOTES FOR THE Equipment Buyer and User



Ideal Dead End Tie-Down Attachment.

simply loosening the clamp bolts the line can be pulled through the clamp in either direction without removing it from the drum.

The Tie-Down Attachment can be secured to the derrick sills in a number of ways. Holes are provided for using a large U-bolt, or a piece of wire rope can be used to hold the attachment. Bulletin No. 185 recently published will be sent on request.

Telescoping Mast

THE ALLSTEEL PRODUCTS MANUFACTURING COMPANY

The Allsteel Products Manufacturing Company, Wichita, Kansas, is now offering a telescoping-pipe mast, 44 or 55 feet in height when fully extended. This mast is mounted on a trailer which can be towed behind a lease truck and used with any servicing hoist. The mast is raised and extended by means of a manually-operated winch. The sheave at the bottom of the mast is optional and is desirable if it is necessary to operate servicing hoist at some distance from the well, due to fire hazard. Mast can be raised and guyed, then trailer removed for servicing operation.

The mast lower section is 8⅝-inch steel casing and the telescoping upper section is 7-inch steel casing, with ladder stirrups on lower casing. The upper section can be locked in lowered or elevated position. Guy lines can be attached at top of lower section and top of telescoping section.

Shock Absorber

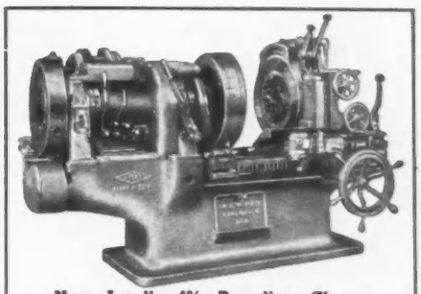
NEW DEAL SPECIALTY COMPANY

The new P-G Shock Absorber is a product of New Deal Specialty Company, Okmulgee, Oklahoma, and is designed for use on all types of cable tool drilling equipment. The manufacturer claims it permits deeper and faster spudding and spudding with wire line. It is adaptable to cable tool derricks, drilling machines and spudders, increasing the stroke and reducing the strain on both wire line and drilling unit.

P-G Shock Absorber

The shock absorber follows the wire line up and down the bull wheel. Self-aligning feature enables the device to

Allsteel Telescoping Mast



New Landis 4¾ Receding Chaser Pipe Threading Machine

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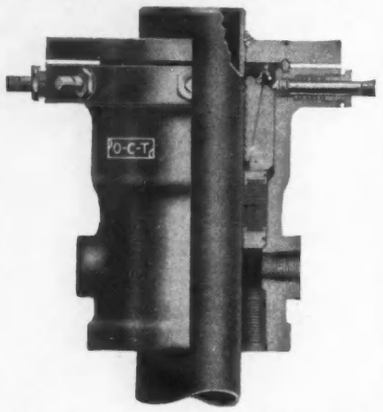
TYPE C-9-PS

SLIP SUSPENSION

CASING HEAD



Permits landing casing at any desired point. Permits drilling and running casing through blowout preventer equipment flanged above. Packing, slips, and slip bowl pass through blowout preventer to seat in body of head. Packing compressed by weight of casing. Hold-down screws aid in compressing packing. Available with or without welding flange, which holds casing down and effects auxiliary seal above slips. Test pressures up to 10,000 lbs.

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Is it automatic?
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Do slips hang free from tubing?

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Your O'Bannon Representative Will Give A Demonstration

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WALTER O'BANNON COMPANY

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Safety

TUBING SPIDER

NOTES FOR THE Equipment Buyer and User

follow the drilling cable on the shaft. No holes are required to be drilled in derrick sills or on drilling machine. Shock absorber is held in upright position, and there are no braces to bend or break.

Hoist

COFFING HOIST COMPANY

Revolutionary changes in spur gear chain hoist design have been incorporated in the new Coffing Power Master Controlled Gravity Lowering chain hoist, according to Coffing Hoist Company, Danville, Illinois. These changes result in time and money savings, and the product will meet the hardest conditions of industrial application.

Coffing Hoist

The new Power Master has such features as controlled gravity lowering—that is—lowering speed controlled by clutch and governors, positive in action, and the load may be stopped at the fractional part of an inch; no hand-over-hand operation of chain to lower load. Another time and money saving feature is the free chain for quick up-or-down load chain adjustment. When there is no load on hoist, by pulling down on right side of the hand chain, it permits the load chain to be adjusted to the load without waste motion on the hand chain. This feature not only saves time but is also fool-proof, as there are no ropes or other gadgets to confuse the operator, and it is impossible to drop load, it is claimed.

Other features include lubri-sealed ball bearings, with planetary gear system sealed and running in oil. The entire hoist represents a high degree of mechanical efficiency. It is equipped with special Diamond chain, and is built in capacities from 1 to 8 tons, with unit weights as low as 86 pounds for the 1-ton and only 169 pounds for the 8-ton.

Oil Meter

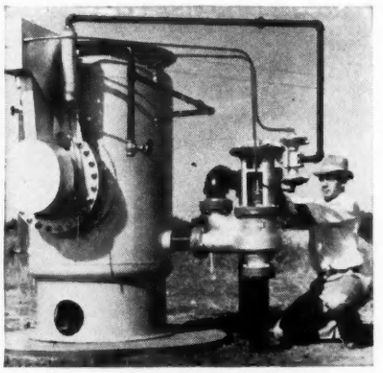
BLACK, SIVALLS & BRYSON

The B. S. & B. Oil Meter, recently developed by Black, Sivalls & Bryson, Inc., Tulsa, is a device for continuous gauging of well production and for reducing evaporation losses by eliminating routine tank gauging.

The meter is a gauging tank designed to operate at separator pressures up to 125 pounds per square inch; an equalizer line connected to the separator vent gas line maintaining the pressure on the meter chamber.

Within the chamber, a large, buoyant float is suspended from a ball bearing-mounted trunnion shaft which actuates the metering valve mechanism with minute precision.

The meter will provide the operator with a complete, continuous record of individual well production and will permit the use of a central gathering system and single battery lease storage to serve a number of wells.



Automatic Oil Meter, Black, Sivalls & Bryson.

History of Conservation

The American Bar Association, Mineral Law Section, recently published a 302-page book on "Legal History of Conservation of Oil and Gas," a symposium consisting of 11 papers that as a whole give the legal history of the regulation of the oil and gas industry in the principal producing states in the interest of conservation; and which at the same time contain much instructive data and interesting discussion relating to the political and economic phases of governmental regulation of an industry. The book may be obtained from the American Bar Association, 1140 North Dearborn Street, Chicago, for $2.50 per copy.

Tractors

The Cleveland Tractor Company, Cleveland, Ohio, has issued a new 35-page bulletin on "Cletrac Crawler" tractors. The bulletin is profusely illustrated with cutaway sections and plan views of the tractor, and various improvements are explained.

Temperature Control Instruments

B. O. Bushnell, Los Angeles, California, has issued Bulletin T.C. 4 on the Bushnell All Range Temperature Controller, for use on stabilizers, oil heaters, dephlegmators, condensers, etc. The construction and applications of the instrument are explained and illustrated.

Steel Tool Houses

Allied Steel Products, 1407 North Peoria, Tulsa, Oklahoma, have prepared illustrated material on a steel tool house. The booklet stresses the steel-thruout construction and several special features which are incorporated in the tool house.

Herringbone Gears

National Supply Company, Toledo, Ohio, has published Bulletin No. 222 on herringbone-type reduction gears for application to pumping powers.

NOTES FOR THE Equipment Buyer and User

J. H. McEvoy & Company Reorganized by Houston Group

A reorganization of J. H. McEvoy & Company, under the new name of McEvoy Company, has been recently announced.

The company is one of the oldest in Houston, having been established in 1906. It manufactures a wide range of oil industry products, chiefly among which are well screens and strainers, casing heads, tubing heads, Christmas trees, and an extensive line of fittings.

The officers of the new company are: President, Gus S. Wortham, president of American General Insurance Company and president of the Longhorn Portland Cement Company; Executive vice president and general manager, George S. Watson, president of Watson Company, builders, and formerly president of Mosher Steel Company; vice president, J. H. McEvoy; secretary-treasurer, Chas. N. McClendon. The board of directors includes the above officers and George A. Butler of Kayser, Liddell, Benbow & Butler of Houston. The plant superintendent is A. Henderson.

G. M. Stewart Handling W-K-M Export Trade

W-K-M Company, Houston, announces the appointment of G. M. Stewart as export representative, succeeding T. L. Putman, resigned. Stewart will continue export operations out of 74 Trinity Place, New York City, effective April 1, the same export location maintained by W-K-M Company for many years.

Bucyrus-Erie Company Names Houston Company Representative

The Bucyrus-Erie Company has appointed Gulf Tractor & Equipment Company, Houston, Texas, representative in that territory where it will handle Bucyrus-Erie shovels, draglines and buckets, clamshell, lifting cranes and drag shovels ranging from the ⅜-yard to 2¼-yard size.

Sand-Banum Appoints Phillips Supply in Ohio

The American Sand-Banum Company, Inc., 9 Rockefeller Plaza, New York, announces appointment of L. H. Phillips Supply, Tiffin, Ohio, as its representatives in the state of Ohio.

International Harvester Company Continues Plant Modernization

A $3,000,000 modernization program for its tractor works in Chicago is included in International Harvester Company's current schedule of plant rehabilitation and rearrangement, it was recently made known at the company's Chicago offices. The local plant modernization program, begun in 1938, will extend through this year and probably will not be completed until some time in 1940.

Including outlay for plant modernization programs already announced at Rock Island, Illinois, and Milwaukee, Wisconsin, and $1,000,000 for new construction in the recently announced motor truck engine plant in Indianapolis, the Harvester Company's present plant modernization and new construction schedule involves the expenditure of about $12,000,000.

The changes at tractor works, located at 2600 West 31st Boulevard, were inaugurated last year with the construction of a $1,000,000 factory addition for the manufacture of the Harvester Company's line of crawler-type tractors. About $800,000 will be spent this year for the purchase of new machinery, the rehabilitation of existing machinery, and the rearrangement of the entire plant so as to obtain greater plant capacity and manufacturing efficiency. No further factory building construction work is involved in the program. The remainder of the $3,000,000 will be spent next year in completing the plant modernization program.

Included in the program is the construction of an employes' dining hall, seating 430 employes, and the construction of a large employes' locker room containing modern sanitation and ventilating facilities.

No immediate increase in employment at the tractor manufacturing plant is expected as a result of the modernization program, but, should business conditions later on step up the plant operations to the enlarged capacity, employment would be materially increased over the present.

E. A. Johnston, International Harvester Vice President, Retires

Retirement of Edward A. Johnston, vice president in charge of engineering and patents of International Harvester Company, and one of the nation's best known agricultural and automotive engineers, has been announced by Sydney G. McAllister, president of the company. Johnston, a veteran of 50 years in the industry, spent 45 years with International Harvester Company or its predecessors. He will be succeeded as vice president in charge of engineering and patents by A. W. Scarratt, who has been assistant to Johnston since 1936.

In the 41-year period from 1897—when as a young man of 22 Johnston was granted his first implement patent—down to 1938 he was granted a total of 171 patents on farm implements and the allied lines of tractors and motor truck. In 1938 he was granted the Cyrus Hall McCormick medal of the American Society of Agricultural Engineers in recognition of his contribution to the engineering profession.

Born at Brockport, N. Y., August 1, 1875, Mr. Johnston went to work at the age of 14 for the Johnston Harvester Co. of Batavia, N. Y., where he worked for five years. In February, 1894, he entered the employ of the McCormick Harvesting Machine Co., where, in 1897, he was granted his first farm implement patent. In 1898 he designed and built an automobile and won a first prize at the Paris Exposition of 1900 with an auto-mower.

Leaving the McCormick Company, he was connected for a time with the Keystone Company at Rock Falls, Ill., and became connected with International Harvester Company in 1905. He directed the

REED'S 'B-R' DRILLING BIT WITH WIRE LINE RETRACTABLE CORE BARREL

HARD FORMATION HEAD (Interchangeable with Soft Formation Head)

REED 'B-R' Drill Collar and 3-Blade Drilling Bit with Core Barrel in position

REED ROLLER BIT CO.

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Toughest materials, especially processed to meet rigid tests and backed by 27 years of valve and pump cup specializing — Dragon Cups (*Composition, Nobs* and *Leather*) are built to "take plenty of punishment," *saving your profits, time* and *nerves.*

For Shallow Wells

"On Duty or in Competition — Fearless As the Dragon"

The Dragon Mfg. Co.
Marietta, Ohio

designing and building of the company's first auto-buggy, predecessor of its line of modern motor trucks, and took charge of its production at a plant in Akron, Ohio. He also directed the designing and building of the company's first farm tractor in 1908 and later supervised the development of the Farmall all-purpose tractor.

From 1908 to 1914 he was in charge of the building and operation of the company's tractor works in Chicago, becoming assistant manager of the company's engineering department in 1915. He was made manager of engineering in 1922, and was elected vice president in 1934.

He has been a member of many committees of the American Society of Automotive Engineers, and a member of the American Society of Agricultural Engineers.

Scarratt has had wide experience in the fields of automotive and agricultural engineering. Born at St. Paul, he began his engineering career with the Twin City Rapid Transit Company and was in the employ of that concern from 1905 to 1913. From 1913 to 1926 he was successively designer, tractor engineer, and chief engineer of the mechanical division of the Minneapolis Steel and Machinery Company. In 1926 he was engaged as assistant chief engineer of Hyatt Roller Bearing Company and was soon promoted to chief engineer.

In 1927 he was engaged as chief engineer of motor trucks and coaches by International Harvester Company. In 1935 he was promoted to be chief of automotive engineering, and in 1936 became assistant to the vice president of engineering.

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THE COMPOSITE CATALOG

OF OIL FIELD AND PIPE LINE EQUIPMENT

National Supply Company Literature

National Supply Company, Toledo, Ohio, has made available the following publications:

Bulletin No. 217 on the Superior two-cycle twin cylinder gas engine-Type GB; No. 216 on the Ideal-Ajax vertical steam engines; No. 215 on the Ideal Rotary Machine HS20½, tablebushings, drill stem bushings and slips for use with the HS20½; No. 211 on Ideal rotary chains of Types G, F, and 3-1/8; No. 210 on Ideal rotary machine FE 17½ for moderate-depth drilling; No. 212 on the National Unit Pumper Type TU2OG-JD2T for economical shallow well pumping; No. 221 on National Pumping Power Type G-75 for medium requirements; No. 223 on unitized countershafts for cable tool drilling and heavy pumping wells.

Electric Motors

The Louis Allis Company, Milwaukee, Wisconsin, has prepared a condensed 8-page booklet showing the wide variety of electrical and mechanical modifications which can be provided in Louis Allis motors. The booklet includes general information on NEMA Standards and Definitions, as well as suggestions for the proper selection of motors, types of drives, various types of protected motors. Information regarding service factors, rated loads, torques, and other important reference information is also included.

Threading Machinery

Landis Machine Company, Waynesboro, Pennsylvania, has prepared a booklet, "Landisize Your Threads," to illustrate the manner in which its machinery will meet general and special cutting and threading problems.

Electric Cables

Anaconda Wire and Cable Company, 25 Broadway, New York, has released an illustrated pamphlet on "Sunex Securityflex," an electric cable with a specially developed rubber and fabric jacket furnished for all voltage requirements and with single and multiple conductors.

Safety Shoes

Lehigh Safety Shoe Company, Allentown, Pennsylvania, are publicizing their steel-toe safety work shoes in a new bulletin which gives information and illustrations on 41 types of safety shoes.

Industrial Safety

Oakite Products, Inc., 14 Thames Street, New York, has published a 12-page booklet, "Greater Industrial Safety," showing how modern cleaning methods and materials effectively promote increased safety of plant, product, and personnel.

Piston Rings

C. Lee Cook Manufacturing Company, Louisville, Kentucky, has released Bulletin 385 describing and illustrating a graphitic iron piston ring coated with a tin-base bearing alloy to reduce friction, prevent scoring, and cut down break-in time.

Pumping Units

Oil Well Supply Company, Dallas, Texas, has released Bulletin 194 describing the TC-8 twin-crank pumping unit for service where the polish-rod load does not exceed 8,000 pounds.

Squeaks from the Bull Wheel

Versatile

A motorist had picked up a hitch-hiker in a sparsely settled area of the Southwest.

"I see you have a kit of tools with you. What is your trade?" ventured the motorist.

"I'm a piano tuner!" replied the grateful hiker.

"A piano tuner!" exclaimed the motorist in surprise. "I'd think the going would be pretty tough for that work in this section of the country."

"You're right," replied the hiker, "but I make a pretty fair living tightening barbed wire fences.

Zoology

"Tell me where the elephant is found."

"The elephant is such a large animal it is scarcely ever lost."

No Just Demand

"How many times must I climb three flights of stairs to collect this bill?"

"What do you expect me to do? Hire a place on the first floor to accommodate my creditors?"

Object Not Matrimony

"Ah wants to see Mistah Tompkins."

"I'm sorry but Mr. Tompkins is engaged."

"Go 'long, Chile. Ah don't want to marry Mistah Tompkins. Ah jes' wanta see him."

As Agreed

"Here's that shirt I bought of you last week," said the angry customer. "You said you would return my money if it was not satisfactory."

"That's what I said," responded the merchant very politely, rubbing his hands, "but I am happy to tell you that I found your money entirely satisfactory."

His Station

Passenger: "Conductor, that fellow sitting opposite us is a lunatic and is scaring my wife and children. He claims he is George Washington."

Conductor: "I'll take care of the matter. (Shouting) Next station, Mount Vernon!"

Taking It Along

"Check your oil, ma'am?"

"No, thanks, I'll take it with me."

Extravagant

"Is Jinks careless with his money?"

"Is he? I've known him to buy bread when he didn't have a drop of gasoline in the tank!"

Not Serious

"It is whispered that you and John aren't getting on!"

"Nonsense! We did have some words and I shot him, but that's as far as our quarrel ever went."

Bertillion

Can you give a description of your missing cashier?

He is about five feet, five inches tall and $7000 short.

Qualified

So you're setting your boy up in the bakery business?

Yes, he's so keen for dough and such a swell loafer that I'm sure he'll rise in the business.

Definitive

How's the vegetable soup today?

Well, it's a good deal like our hash, only it's looser.

Mercenary

A burglar, entering the home of a Riverside heiress, upon surprising her, remarked: "I don't want your life, but your money, lady."

"Oh, go away," she replied petulantly, "you are just like the rest of them."

Missed

"I shall miss you while you are on your hunting trip, dear," said the young wife. "And I shall pray that the other hunters do the same thing."

Quite

"I'm cutting quite a figure," said the chorus girl, as she sat down on a broken bottle.

Braintruster

Has your wife learned to drive the car yet?

Yes, in an advisory capacity.

Exactly

"I can tell you how much water to the quart goes over Niagara Falls."

"Betcha can't. How much?"

"Two pints."

Dialectician

Didja see me come in that door?

Yesh.

Never shaw me before in your life, didja?

Nope.

Then howja know it was me?

Socially Minded

"I'm going to enter my dog in the dog show this year."

"Do you think he will win?"

"No, but he'll meet some nice dogs."

Oui, Oui

"Marie, don't you think my husband is a dimwit?"

"Oui, madame, he ees veree amusing in ze dark!"

Experience Maybe

"Paw, does bigamy mean a man has one wife too many?"

"Not necessarily, my son. A man can have one wife too many and still not be a bigamist."

Hard to Find

"I switched milkmen."

"Better milk?"

"No, better milkman."

Baffling

Engineers, it is rumored, are baffled by the fact that some of the girls with the most streamlined figures offer the most resistance.

WELLS NEED

Cleaning TOO!

Sand and sediment hold back the oil—clean them out quickly at small cost with the MILLER, *the Sand Pump in World-Wide use.*

The MILLER is made in diameters of 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9 inches and lengths of 20, 25 and 30 feet. 5/32-inch wall thickness in REGULAR Type. ¼-inch wall tubes HEAVY Type Sand Pumps.

INTERCHANGEABLE BOTTOMS

To Meet Every Condition

● **BAILER BOTTOM**

With the Bailer Bottom installed the MILLER is quickly changed to a Bailer giving you a combination of either Bailer or a Sand Pump in one tool.

● **SAND BOTTOM**

Used when tools are run and when well is shot to quickly remove loose material.

STAR BOTTOM

Used for cutting the sand loose.

● **CHISEL BOTTOM**

(In Pump)

With this bottom tightly packed sand can be easily broken in small pieces so it can be picked up in the pump.

Write for Descriptive Folder and Price List

See Pages 1564-65 COMPOSITE CATALOG

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INDEX TO ADVERTISERS

A

	Page
J. S. Abercrombie Co.	—
Abercrombie Pump Co.	80
Acme Gas Lift Co.	—
Ajax Iron Works	—
Allsteel Products Manufacturing Co.	—
American Askania Corp.	—
American Assn. of Petroleum Geologists	—
American Cable Division	—
American Cast Iron Pipe Co.	—
American Chain & Cable Co.	Third Cover
American Hammered Piston Ring Division of Koppers Co.	—
American Iron & Machine Works Co.	—
American Meter Co.	—
American Sand-Banum Co.	4
American Steel & Wire Co.	—
Athey Truss Wheel Co.	—
Atlas Powder Co.	65
Axelson Manufacturing Co.	—

B

Baash-Ross Tool Co.	—
Baker Oil Tools, Inc.	—
Baldwin-Duckworth Chain Corp.	—
Bantam Bearings Corp.	—
Baroid Sales Co.	—
William M. Barret, Inc.	83
Bartlett-Hayward Division of Koppers Co.	—
Beaumont Iron Works Co.	—
Bethlehem Steel Co.	—
Black, Sivalls & Bryson	—
Hotel Blackstone	—
E. M. Blue & Son	83
Bradford Motor Works	—
The Brewster Co.	—
The Bridgeport Machine Co.	—
Buckeye Traction Ditcher Co.	—
The Buda Co.	—
A. M. Byers Co.	—
Byron Jackson Co.	—

C

Jo H. Cable	—
Cameron Iron Works	—
Carnegie-Illinois Steel Corp.	—
J. I. Case Co.	—
Caterpillar Tractor Co.	—
The Cavins Co.	—
Chain Belt Co.	—
Chiksan Oil Tool Co.	—
Climax Molybdenum Co.	—
Columbian Steel Tank Co.	—
Continental Oil Co.	—
The Continental Supply Co.	—
Fred E. Cooper Co.	—
The Cooper-Bessemer Corp.	—
Core Drilling Co.	—
Crane Co.	—
Cummins Engine Co.	—
W. H. Curtin Co.	—

D

Darling Valve & Manufacturing Co.	81
The Dayton Rubber Mfg. Co.	—
Deckard Manufacturing Co.	—
Dedman Foundry & Machine Co.	—
DeWitt Operated Hotels	—
Dowell Incorporated	8
The Dragon Manufacturing Co.	87

E

Economy Electric Lantern Co.	—
Elliott Core Drilling Co.	—
Enardo Foundry & Manufacturing Co.	—

F

Geo. E. Failing Supply Co.	—
First National Bank, Houston	—
First National Bank & Trust Co. of Tulsa	—
Fluid Packed Pump Company	45
The Fort Worth Laboratories	83
The Benjamin Franklin Hotel	—
Frick-Reid Supply Corp.	31

G

Gardner-Denver Co.	—
The Garlock Packing Co.	—
Gaso Pump & Burner Manufacturing Co.	—
General Electric Co.	—
General Motors Corp.	—
Geophysical Service, Inc.	2-3
Goodyear Tire & Rubber Co.	—
H. P. Gott Manufacturing Co.	—
Grant Oil Tool Co.	—
Gray Tool Co.	—
The Guiberson Corp.	—
Gulf Coast Machine & Supply Co.	—
Gulf Envelope Co.	85
Gulf Publishing Co.	4, 41, 77, 88

H

Halliburton Oil Well Cementing Co.	—
Hardway & Cathey	83
Harnischfeger Corp.	—
Haynes Stellite Co.	—
Hazard Wire Rope Division, American Chain & Cable Co.	Third Cover
The Hercules Powder Co.	55
The Hercules Steel Products Co.	78
Hercules Supply Co.	—
Hewitt Rubber Corp.	—
Hoard Exploration Co.	—
Houston Laboratories	83
Hughes Tool Co.	26-27 and First Cover
Humble Oil & Refining Co.	—
Hyatt Bearings Division	—

I

Independent Exploration Co.	—
The Inferno Co.	—
Ingersoll-Rand Co.	—
International Derrick & Equipment Co.	—
International Harvester Co.	19
The International Nickel Co.	—

J

D. O. James Manufacturing Co.	77
Jarecki Manufacturing Co.	—
Jensen Brothers Manufacturing Co.	—
Johns-Manville	—
The Jones Oil Co.	—
The S. M. Jones Co.	—
Jones & Laughlin Steel Corp.	—

K

The Kennedy Valve Manufacturing Co.	—
Keuffel and Esser Co.	—
Keystone Driller Co.	—
Kodiak Guides	83
Koppers Co.	—

L

Laminated Shim Co.	—
Landis Machine Co.	—
Lane-Wells Co.	6-7
Larkin Packer Co.	—
The Layne & Bowler Co.	—
Lee Rubber and Tire Corp.	—
Hotel Lenox	—
A. Leschen & Sons Rope Co.	—
The Lincoln Electric Co.	—
Link Belt Co.	—
Lone Star Cement Corp.	—
Lucey Boiler & Manufacturing Co.	—
Lufkin Foundry & Machine Co.	—

M

MacClatchie Manufacturing Co.	—
Macwhyte Co.	—
D. S. Mair Machinery Corp.	85
Maloney Tank Manufacturing Co.	—
Manhattan Rubber Division	—
Marmon-Herrington Co.	—
Martin-Decker Corp.	50
Hotel McAlpin	—
McGill Manufacturing Co.	—
The Medart Co.	—
Merco Nordstrom Valve Co.	—
Metric Metal Works	—
Miller Sand Pump Co.	89
Mission Manufacturing Co.	10
Mississippi State Mineral Lease Commission	83
Lee C. Moore & Co.	—
Motor Improvements, Inc.	—

N

National Bank of Tulsa	—
National Lead Co.	—
The National Supply Co.	21
National Tube Co.	—
New Deal Specialty Co.	—
New Weston Hotel	83
Norvell-Wilder Supply Co.	—
Novo Engine Co.	—

O

Walter O'Bannon Co.	86
O.C.S. Manufacturing Co.	—
Oil Center Tool Co.	86
Oil City Brass Works	—
Oil Well Supply Co.	—
Oil-World Exposition, Inc.	29
Otis Pressure Control, Inc.	—

P

The Parkersburg Rig & Reel Co.	—
Patterson-Ballagh Corp.	—
Pelican Well Tool & Supply Co.	76
Petroleum Electric Power Club	47
Petroleum Rectifying Co. of California	—
Petty Geophysical Engineering Co.	—
Philadelphia Gear Works	—
Pittsburgh Equitable Meter Co.	—
Pittsburgh Steel Co.	—
Hotel Pittsburgher	—
Plymouth Cordage Co.	71
Portable Rig Co.	—

R

Raybestos-Manhattan	—
Reading-Pratt & Cady Co.	—
Rector Well Equipment Co.	—
Reda Pump Co.	—
Reed Roller Bit Co.	36-37 and 87
Reliable Supply Co.	85
Republic Steel Corp.	22-23
The Ridge Tool Co.	—
Rollway Bearing Co.	—

S

Sam Houston Hotel	—
Jack A. Schley	83
Schlumberger Well Surveying Corp.	33
The Second National Bank of Houston	—
Security Engineering Co.	—
Seismograph Service Corp.	—
Shell	—
SKF Industries, Inc.	—
A. O. Smith Corp.	—
E. M. Smith Co.	—
Howard Smith Co.	—
The Sonner Burner Co.	—
South Chester Tube Co.	—
Southern Engine & Pump Co.	79
Southern Pacific Lines	—
Spang & Co.	—
Spang Chalfant, Inc.	—
Sperry-Sun Well Surveying Co.	—
Standard Brake Lining Co.	85
Star Drilling Machine Co.	—
Sterling Engine Co.	—
Stevens Hotel	—

T

Templeton, Kenly & Co.	—
Texas Electric Steel Casting Co.	—
Texas Iron Works	—
Thermoid Rubber, Division of Thermoid Company	—
The Timken Roller Bearing Co.	—
Town House Hotel	78
Tretolite Co.	—
Trinity Portland Cement Co.	—

U

Union Wire Rope Corp.	—
Union Carbide & Carbon Corp.	—
United States Rubber Co.	—
United States Steel Corp.	—
Universal Atlas Cement Co.	—

W

Warner & Swasey Co.	5
The Watson-Stillman Co.	—
Waukesha Motor Co.	75
Webster Engineering Co.	—
The Wheland Co.	—
Wickwire Spencer Steel Co.	—
J. H. Williams & Co.	—
Paul B. Williamson	—
Wilson Supply Co.	39
Witte Engine Works	—
Worthington Pump & Machinery Corp.	—
Wyatt Metal & Boiler Works——Fourth Cover	

Y

Young Engine Corp.	—
Young Radiator Co.	—
Youngstown Sheet & Tube Co.	17